AN APPLICATION OF THE MOTIVATOR-HYGIENE THEORY TO PUBLIC JUNIOR COLLEGE PERSONNEL

By
PAUL RAYMOND LYONS

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Abstract of Dissertation Presented to the Graduate Council
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AN APPLICATION OF THE MOTIVATOR-HYGIENE THEORY TO PUBLIC JUNIOR COLLEGE PERSONNEL

By

Paul Raymond Lyons

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Chairman: Dr. James L. Wattenbarger
Major Department: Educational Administration

The major purpose of this investigation was to attempt to determine the extent to which junior college personnel exhibit constellations of job attitudes consistent with Herzberg's Motivator-Hygiene theory when a methodological approach different from sequence of events was employed to determine the existence of job factors. To avoid areas of major criticism lodged at methodological creativeness in dealing with the theory, namely--use of too few a priori First Level Factors and use of measures of overall satisfaction-dissatisfaction, this investigation concerned itself with eight First Level Factors and made no attempt to assess overall satisfaction-dissatisfaction. In addition, several hypotheses were presented

concerning sub-sample differences on factors--should a definable factor structure emerge. These sub-samples were occupational faculty, academic faculty and administrators--within each college.

The semantic differential format was utilized to obtain the raw data to be transformed for use in factor-analytic solutions and subsequent statistical manipulations. Eight First Level Factors were converted to concepts or concept phrases and paired with each and every one of eight evaluative adjective bipolar word pairs. This combination gave rise to a 64-item instrument which also contained questions relating to such descriptive variables as employment category, age, sex, years of experience, and level of education. Approximately 40 percent of the full-time staff at each of two of Florida's public community junior colleges responded to the instrument. One institution was labeled as "urban" the other "sub-urban." Both colleges became operational in the same year.

The data was subjected to both orthogonal (Varimax) and oblique (simple loadings) factor solutions. A factor structure was selected from the Varimax rotations as being most meaningful. Incomplete factor scores were calculated on the basis of this factor structure and colleges, sub-samples, and combined sub-samples were compared for mean factor score differences over the factors (6) from the chosen rotation.

In order to examine the basic assumptions underlying the Motivator-Hygiene theory, rotation of only two factors was carefully

examined and found to be highly inclusive in terms of variable (item) accountability and amount of variance but not psychologically meaningful.

The structure (rotation of 6 factors) that did emerge as being most meaningful consisted of five factors (I. College Policy and Administration, II. Responsibility for Performance, III. Supervision, IV. Status, and VI. Working Conditions). This structure accounted for 82 percent of the common variance and 61 of the 64 variables loaded .50 or greater. The factor structure was probably the most significant aspect of this investigation. In terms of satisfaction-dissatisfaction the entire sample (N = 160) mean factor scores were not significantly different from one another. While there was no basis for satisfaction-dissatisfaction in the discrimination of specific job factors for the total sample, college samples and sub-samples were found to differ significantly on all of the factors to some degree.

In terms of tests of hypotheses, the two colleges were significantly different across all factors. College A and its sub-samples had consistently lower mean factor scores than did College B. In terms of sub-sample differences, Factors I (College Policy and Administration) and Factor IV (Status) discriminated between sub-samples with the greatest frequency, respectively. Perhaps the most significant result of this series of comparisons was the combined sub-sample comparisons in which case administrators differed significantly from teaching faculty while there were no differences found between the two teaching faculty sub-samples.

It was concluded that this investigation did not confirm the Motivator-Hygiene Theory of Frederick Herzberg, but it did provide strong support for the existence of specific job factors.

CHAPTER I

INTRODUCTION

In the western cultural milieu the concept of work has not traditionally been considered an intrinsic value for man (6:5). Man "worked" to earn his way in the world and to assure himself of a place in the spiritual world [Protestant ethic]. Extrinsic benefits such as duty, religion and money always served to define work. Man worked because it was socially required of him not because he found satisfaction in it.

Since the advent of the work organization it can be shown that many of the early leaders in organizational theory believed that efficiency could be achieved by selecting the job for the individual and then instructing him in methods of performance. Motivating thrusts were considered external to the individual (64:138-40).

In regard to the need for efficiency, Getzels stated how educational organizations attempt to operate along these lines:

> The administrative relationship in education, as in other bureaucratic institutions, is based on segmental functional rather than total emotional ties--at least according to the table of organization. The rights and obligations of the participants in the interaction are defined by official, not by affective, considerations, and factors of role competence are more important than factors of personal friendship. Decision-

> making and communication nominally--that is, according to the table of organization--takes place in a formal hierarchy of offices independently of the personalities of the incumbents of the offices. The relationship is predicated on universalistic rather than particularistic standards. (19:88)

Work is still regarded by most individuals as a means to an end. Pleasant interactions with co-workers, outlets for aggression, means of support, and self-preservation are considered by many individuals to fulfill their psychological needs with regard to work (45:XIV).

During the first third of the twentieth century, the Hawthorne studies of Roethlisberger and Dickson introduced to the behavioral sciences some new dimensions of the work scene--job satisfaction and personal effectiveness (51). Their work deplored the mechanization and dehumanization of the occupational setting.

Within the past twenty years some new theories of the meaning of work have emerged from the ideas of the phenomenological, organismic, and perceptual psychological theorists. For many of them, work has been regarded as a means for self-expression, growth, and ultimately self-actualization (42:31).

Occurring also within the past twenty years has been a great deal of research conducted on the nature of job attitudes and job satisfaction. Much of this research has centered around the work of Frederick Herzberg.

Armed with the results of a previous study (27) which was designed to examine the relevant literature dealing with job attitudes, Herzberg set out to answer a few basic questions in the area of job attitudes. The results of this previous study revealed that job attitude measurement had been approached from three different angles: the worker was either (1) asked directly to express his "job satisfaction" (2) given scaled inventories of morale or job attitude, or (3) was subjected to behavioral observations (27).

The most dramatic finding, for Herzberg, that grew out of this research was that there was a difference in the primacy of job factors, depending on whether the researcher was looking for things the worker liked about his job or about things he disliked. This suggested that some factors were satisfying to the worker and others were dissatisfying.

Herzberg believed that most of the previous work on job attitudes had been too fragmentary in nature--a new approach was needed. The primary need, as he saw it, was a comprehensive investigation of job attitudes; one in which factors, attitudes and effects would be investigated.

The most significant characteristic of the design developed in order to satisfy that need was that a subject [worker] would be requested to identify instances in his own history when his feelings about his job were unquestionably either higher or lower than usual. The assumption was made "that people could place their own feelings about their own jobs on a continuum, identify the extremes of this continuum, and choose those extreme situations to report" (28:14).

Herzberg also assumed that distorting interference arising out of the "halo-effect," the "social acceptance" value of certain job factors, and unconscious motivation would be minimized when a respondent was talking about actual events occurring during a period of high or low morale, as contrasted with his ranking or rating general factors. The interviewing technique was semi-structured, that is, the interviewer gives direction to the interview but within broad limits. Herzberg summarized as follows:

> We decided to ask people to tell us stories about times when they felt exceptionally good or bad about their jobs. We decided that from these stories we could discover the kinds of situations leading to negative or positive attitudes toward the job and the effects of these attitudes. . . . We felt strongly, however, that a quantification of both attitudes and criteria would be premature. Indeed, premature quantification might hinder investigation of the entire complex as an entity for each individual. (28:17)

The actual behavioral reports of the respondents in the interview within the design of the study came to be called the "sequence of events." Narrowly delimited anecdotal sets of events were termed short-range sequence of events. The following criteria held for a long-range sequence of events: should cover a minimum in time from a few weeks to a month--maximum could be a number of years, should be identified by the respondent as a period of time during which his overall feelings about his job were consistently high or low, the long-range sequence must be bounded in time (28:23).

Herzberg summarized:

> The central core of the design was the notion of the sequence of events as a unit, bounded in time, which an individual's attitudes toward his job are characterized by himself as exceptionally positive or exceptionally negative. From the respondents' report on this sequence of events the triad of factors--attitudes--effects can be studied as a unitary system within which functional relationships among the components can be described. These components were to be derived from answers to questions asked in the interviews. (28:28)
>
> The components are given below:
>
> 1. First Level Factors--a description of the situation that gave rise to the negative or positive attitudes;
> 2. Second Level Factors--the reasons given by respondents for the above attitudes;
> 3. Effects--how did these attitudes affect his work?

Even though the study was exploratory in nature, Herzberg hypothesized as follows:

> The major hypothesis was that the factors leading to positive job attitudes and those leading to negative attitudes would differ. A second basic hypothesis was that the factors and effects involved in the long-range sequences of events would differ from those in short-range sequences. (28:29)

The sample selected for the study was composed of 203 engineers and accountants from the Pittsburgh area. Each subject was interviewed with respect to factors--attitudes--effects. The 203 recorded interviews were then broken down into "thought units." A thought unit is "defined as a statement about a single event or condition that led to a feeling, a single characterization of a feeling, or a description of a single effect" (28:38). "That drawing board was like a weight around my neck." (28:38)--can serve as an example. A sample of 5,000 thought units of the entire sample was typed on 3 x 5 inch index cards and independent raters put the units into piles, that is, those units that seemed to "go together." The piles were, in actuality, many sub-categories within each of the major categories (First and Second Level Factors, and Effects). The inter-rater reliability was greater than .95.

The First Level Factors [an objective element of the situation in which the respondent finds a source for good or bad feelings about the job] that emerged from the above analysis were as follows:

Recognition
Achievement
Possibility of Growth
Advancement
Salary
Supervision
Responsibility
Company Policy and Administration
Working Conditions
Work Itself
Factors in Personal Life
Status
Job Security
Interpersonal Relationships: Superiors, Peers, Subordinates

Second Level Factors were mostly feelings surrounding the First Level Factors. Effects centered around performance, job turnover, interpersonal relationships, and attitudes.

Considering only First Level Factors in regard to positive job attitudes the results demonstrated that: only a few factors are responsible for good feelings about the job and they are achievement, work itself, recognition, responsibility, advancement, and possibility for growth; these are all job content [intrinsic] factors; the good feelings stemming from these factors are lasting rather than temporary. In regard to negative job attitudes the results demonstrated that: only a few factors are responsible for bad feelings about the job and they are company policy and administration, supervision, interpersonal relationships with superiors and/or peers and/or subordinates, working conditions, status, personal life, security, and salary; these are all job context [extrinsic] factors; and the feelings stemming from these factors are relatively short-term. The two hypotheses were thus substantiated.

To underscore the significance of the findings as well as clarify the concepts underlying the so-called "two-factor" theory, the following passage from the original investigation is given here:

> One of the basic habits of scientific thinking is to conceive of variables as operating on a continuum. According to this, a factor that influences job attitudes should influence them in such a way that the positive or negative impact of the same factor should lead to a corresponding increase or decrease in morale. Perhaps some of the confusion as to what workers want from their jobs stems from the habit of thinking that factors influencing job attitudes operate along such a continuum. But what if they don't? What if there are some factors that affect job attitudes only in a positive direction? If so, the presence of these factors would act to increase the individual's job satisfaction, but the failure of these factors to occur would not necessarily give rise to job dissatisfaction. Theoretically, given an individual operating from a neutral point, with neither positive nor negative attitudes toward his job, the satisfaction of the factors, which we may call the 'satisfiers' [or motivators], would increase his job satisfaction beyond the neutral point. The absence of satisfaction to these factors would merely drop him back to this neutral level but would not turn him into a dissatisfied employee. Contrariwise, there should be a group of factors that would act as 'dissatisfiers' [or hygienes]. Existence of these negative factors would lead to an unhappy employee. The satisfying of these factors, however, would not create a happy employee. (28:111)

The findings and the conclusions from the original Herzberg investigation have opened up whole new vistas of research possibilities. This has been especially true in the areas of morale research and job satisfaction research in industry and in business. Researchers in the field of education have also responded to Herzberg's conclusions as is evidenced from thorough review of the literature and research. One can find evidence that educational researchers are contemplating the possibilities of constellations of job factors--the notion that all job factors can be found on a single continuum is no longer sacred (26). Anchoring job satisfaction research to a particular theory helps satisfy some very definite validation needs in the area of job satisfaction in educational settings (4:208).

Thorough review of the literature and research in the area of job satisfaction reveals that the original Herzberg study has been replicated many times. Within the field of education the study has been replicated several times within the past ten years. These replications utilize the same sequence of events methodology designed by Herzberg and are subject to the same criticism as the original study. The essence of the criticism is that Herzberg's conclusions, based on the findings, are due to the methodology employed--the two-factor theory is method bound, that is, if methods other than the sequence of events technique are employed the two constellations of factors will not necessarily be in evidence.

In the field of higher education and more specifically in the junior college setting, job satisfaction research has been sparse. With regard to job factors, the work of Richardson and Blocker (50) stands out as the most definitive investigation in this area. In that investigation several clusters of job factors were found to be of some significance in the analysis of the job attitudes of the faculty members of one western junior college.

As the number of persons employed as full-time faculty in junior colleges is consistently increasing and as the level of morale may be decreasing (38:5), it seems to follow that this segment of the educational population requires further study. It may be that personnel in junior colleges in different areas and institutional environments may exhibit different constellations of job factors, in terms of satisfiers and/or dissatisfiers.

In many studies dealing with the theoretical aspects of job satisfaction, the samples or populations utilized appear, in the main, to satisfy the need for convenience. It appears that very few attempts are made to compare data of one specifically defined group with those of another group.

What seemed to be needed at this point was an investigation designed to determine whether or not specific constellations of satisfier (called motivator) and dissatisfier (called hygiene) job factors exist for junior college personnel. Evidence of the existence of such constellations of job factors or the primacy of certain factors may point to ways in which faculty-administrator relations may be improved. By attending to the value and intensity awarded different job factors, college administrators may be able to enhance staff relations, which may ultimately lead to the improvement of instruction. The maximizing of the occurrence of more positively valued job factors and the minimization of the occurrence of more negatively valued job factors may lead to the facilitation of greater faculty participation in policy determination.

The value that particular components of college staffs (administrator, faculty) award to certain job factors may give rise to the formulation of policy for the enhancement of efforts to involve these components in greater cooperative endeavors and may point to the possibility of the escalation of shared participation in institutional decision-making.

The theoretical formulation of Herzberg's findings were utilized as the basis of operation with appropriate deviation from the originally employed, much replicated (and criticized), methodology of sequence of events.

Statement of the Problem

The major purpose of this investigation was to determine the extent to which academic faculty, occupational faculty, and administrative personnel in two public community junior colleges exhibit constellations of job attitudes consistent with Herzberg's Motivator-Hygiene theory when sought with a methodological approach different from that used in the original investigation.

The following sub-problems were identified:

1. Whether or not Herzberg's job factor constellations are in evidence, is there a definable job factor structure indicated by the data analysis?

2. Do differences exist between junior colleges (urban, suburban) in terms of job factor primacy?

3. Do differences exist among sub-samples (academic faculty, occupational faculty, administrators) both within and among colleges in terms of job factor primacy?

Hypotheses

1. Motivator and hygiene concepts do not form two separate and distinct factors.

2. There is no difference in job factor scores between college sub-samples (College A vs. College B).

3. There is no difference in job factor scores between within-college sub-samples (academic faculty vs. administrators, occupational faculty vs. administrators, and academic faculty vs. occupational faculty--for both colleges).

4. There is no difference in job factor scores between academic faculty sub-samples (College A academic faculty vs. College B academic faculty).

5. There is no difference in job factor scores between occupational faculty sub-samples.

6. There is no difference in job factor scores between administrator sub-samples.

7. There is no difference in job factor scores between combined sub-samples from both colleges (administrators vs. academic faculty, administrators vs. occupational faculty, academic faculty vs. occupational faculty).

Scope of the Study

The sample was composed of academic teaching faculty, occupational teaching faculty and administrative personnel from two public community junior colleges in the State of Florida.

Due to the nature of the untested status of the combination of the particular theoretical position and the instrumentation employed, this investigation was to be regarded as exploratory in nature.

Justification for the Study

This investigation makes a contribution to the basic body of knowledge concerning job attitudes and job motivation, particularly as it relates to the community college. Champagne (9:7) said, "... such conflict [as found in the examination of research on job motivation] leaves the field of job motivation open to further research using a variety of experimental methods." Vernon (63) also points out that the vocational uses of the semantic differential have received limited attention.

The design of the study was such that it avoided two major criticisms launched at studies dealing with the two-factor theory [that is, those studies employing designs different from the sequence of events methodology]. This investigation incorporated: a. eight of the two-factor theory First Level Factors; and b. a conscious attempt to avoid assessment of overall job satisfaction.

It is hoped that the data base provided by this investigation will generate hypotheses for future investigations. The heuristic value of the methodological approach should provide unlimited possibilities for research.

With regard to community junior college personnel, Medsker (44, Chap. 7), Garrison (18), and others point to the importance of faculty attitudes and competence as they relate to the success of the junior college. The findings of Kurth and Mills (38) indicate that there may be a general shift downward of faculty attitudes in regard to level of morale within colleges. Their work (38:5) presented data which indicated that over a six-year period 5 percent of the 1968 sample of junior college faculty rated "faculty morale" lower than did a 1962 sample. An indication of the degree and types of personnel satisfactions and dissatisfactions would aid in understanding this possible trend.

This investigation enables one to examine types and degrees of satisfaction-dissatisfaction within and between different junior colleges and sub-samples of the junior colleges. It provides useful information for administrators which may enable them to understand more thoroughly attitudes and perceptions held by faculty and other administrators.

Finally, it is hoped that this investigation helps to fill a void in the area of morale and job satisfaction research in collegiate institutions.

Definition of Terms

Academic Faculty--those faculty members of public community junior colleges in the State of Florida who are full-time teaching personnel with at least 51 percent of their teaching load concentrated in the transfer and/or general education curricula.

Administrator--a member of the staff of a public community junior college in the State of Florida who is a full-time junior college administrator with at least 51 percent of his duties being of an administrative nature.*

Constellation--(as related to job attitudes) a collection of job factors.

Extrinsic--(as related to job attitudes) those job factors or elements that are found in the context of the job itself.

Hygienes--elements of the job situtation, when having negative meaning for the employee, lead to job dissatisfaction.

Intrinsic--(as related to job attitudes) those job factors or elements that are found in the content of the job itself.

---

*as defined by the college.

Job Attitudes--predispositions toward an evaluative response regarding job factors or elements.

Job Factors--elements or aspects of the work situation.

Motivator--elements of the job situation, when having positive meaning for the employee, lead to job satisfaction.

Occupational Faculty--those faculty members of public community junior colleges in the State of Florida who are full-time teaching personnel with at least 51 percent of their teaching load concentrated in the occupational and/or vocational and/or technical curricula.

Sub-Urban--a definable area of relatively low population density and at least one-third of the total land area in farms. **

Urban--a definable area of relatively high population density and less than one-fourth of the total land area in farms. **

** as indicated in the 1969 Florida Statistical Abstract (pp. 21, 256-7), the district served by College A contains 490 percent more inhabitants than the district served by College B. In addition, the district served by College A is only 19 percent greater in area than the area of the district served by College B, and the former has 15 percent of its land area in farms while the latter (College B's district) has 44 percent of its total land area in farms. It would appear then, that the two districts differ considerably in terms of population density and land use--hence the use of the terms urban (College A) and sub-urban (College B).

CHAPTER II

REVIEW OF RELATED RESEARCH

Consisting of four major sub-sections, this review is organized as follows: first, a brief account of job satisfaction research in the field of education; second, the body of research that has sought to replicate Herzberg's original work as well as that research that is generally supportive of Herzberg's findings; third, the body of research that has been conducted which sought to discredit the two-factor theory as well as that research and opinion that is critical in a negative sense; and lastly, an overall summary of findings and opinion.

Job Satisfaction Research in Education

Within the field of job attitudes it is probable that clear distinctions can be made between morale research and job satisfaction research. Due to the paucity of job attitude research in education, however, these two terms may be treated as being synonymous (4:200).

Most of the early studies of job attitudes in educational settings were descriptive in nature. Many studies involved the respondent's ranking of particular institutional features or his description of those job characteristics that satisfied and/or dissatisfied him (36).

Investigation after investigation demonstrated that the same job factors seemed to be responsible for expressed feelings of satisfaction and/or dissatisfaction.

In a study of supervisory policies, Cralle and Burton (10) found that some of the major causes of frustration for teachers were: lack of participation in policy decisions, too heavy work load, salary policy, arbitrary reassignments, and lack of supervision.

Kenneke (37), in a study of satisfaction-dissatisfaction of teachers, found the major sources of job satisfaction were working conditions and faculty interactions. Satisfaction with conditions of work centered around adequacy and condition of equipment, class size, and sufficient time to teach. Peer satisfactions centered around professional and social relationships. The major sources of dissatisfaction were salary considerations, working conditions, and administration. Extra assignments, maintenance duties, and budget allocations accounted for dissatisfaction with working conditions, while dissatisfaction with administration clustered around communication of orders and decisions, foresight and planning, and consistency of procedures and planning.

In response to his questionnaire, Monford (46) found that the factors listed as being most important to a teacher's work were:

helpful supervisors, freedom to plan and teach, and good relations with co-workers.

In general, institutions of higher education have seemingly lagged behind K-12 institutions with respect to staff morale and job satisfaction. There have been, however, a few notable investigations conducted with junior college faculty.

Using a random sample of Texas junior college faculty members, Taylor (61) attempted to determine which institutional environmental factors had an effect on instructor's job satisfaction. Based on analysis of responses to the instrument designed for the study, Taylor drew the following conclusions: administrative policies and practices are the most important environmental factors in predicting faculty job satisfaction; and physical plant, services, financial factors, equipment supplies, and relations with faculty colleagues are not significantly related to faculty job satisfaction.

Siehr, Jamrich, and Hereford (58) made a nationwide survey in 1963 to identify the kinds of problems perceived by new faculty members in community junior colleges. Based on 57 percent return, the study revealed that new faculty members perceived the following as their most persistent problems: lack of time for scholarly study, adapting instruction to individual differences, acquiring adequate secretarial help, and availability of instructional materials.

Garrison (18) visited twenty junior colleges and interviewed over 650 junior college teachers concerning the setting in which they work and the basic issues and problems as seen by the individual teacher. Garrison found that these faculty members reported their most pressing problems to be: lack of time to perform duties adequately while keeping up in their field, lack of opportunity to participate in decision-making, unimaginative and inflexible administrative context, and lack of communication between faculty and administration.

Richardson and Blocker (50) constructed and administered the Differential Morale Attitude Inventory to sixty-six members of the faculty of a Midwestern junior college. After being factor-analyzed, the twelve differential categories (which discriminated among responses beyond the .01 level of significance) were found to be clustered in four factors. Factor I is identified as Supervision. Communication, confidence in administration, relations with immediate supervisor, and professional growth and advancement were the categories of the inventory that loaded high on this factor. Factor II is called Self-Integration. Highly loaded categories were: relations with fellow workers, status and recognition, and identification with institution. Factor III is called Institutional Environment. Categories with high loadings on this factor are: relations with students, professional growth and advancement, work environment and work load. This factor seemed to be very closely related to working conditions in general. Factor IV has been called Employment Rewards. The categories of salary, and adequacy of fringe benefits have high loadings on this factor.

More recently, Kurth and Mills (38) armed with questionnaire results from almost 80 percent of Florida's public community junior college faculty members (N = 3,022) have been able to examine a large number of responses to common items as well as to make comparisons between the most and least satisfied sub-populations of this group. A major portion of the investigation served to replicate an earlier study (1962) so as to up-date the findings. Of the entire population, 59 percent consider faculty morale in their particular institution is good or very good as compared to 64 percent in 1962; 70 percent consider the flow of information between the administration and faculty fairly adequate or entirely adequate as compared to 87 percent in 1962 (38:5). There were several comparisons made between the satisfied and the dissatisfied members of the population. The "satisfied" group consisted of 454 full-time faculty respondents who, by their responses to 59 questions numbered 167-225 in the questionnaire, indicated the highest degree of satisfaction with a variety of features and conditions in their own junior colleges. The "dissatisfied" group consisted of 444 of the full-time faculty respondents who, by their answers to the same questions, indicated the highest degree of dissatisfaction. Some of the items on which the highest percentage of the dissatisfied group indicated dissatisfaction were: faculty participation in institutional policy formulation and decision-making (82.9%), effectiveness of faculty meetings (76.4%), eating facilities (71.2%), college organization and administrative procedures (70.7%), and faculty in-service programs (67.5%).

The greatest difference or spread on satisfaction between the two groups was in the following areas: college organization and administration, faculty participation in institutional policy-making, effectiveness of faculty handbook, faculty participation in curriculum development, and effectiveness of faculty meetings (38:7). One significant factor found was that the satisfied group is made up of more administrators and fewer counselors and teachers than the dissatisfied group (38:6).

It can be seen that throughout these studies several factors continually emerge as sources of satisfaction or dissatisfaction. It was findings such as these that enabled Herzberg to formulate the basis of his theory.

Two-Factor Theory: Supportive Evidence

Adair's replication of the original study was conducted in New York State with eighty-one public secondary school teachers (1). Achievement was one of the most frequently appearing motivators while company (school in this case) policy and administration and interpersonal relationships with superiors were hygienes.

Savage (55), like Adair, used the sequence of events method with teachers. The major findings revealed that the motivators for teachers were: achievement, recognition, and interpersonal relationships with students. The hygienes were: supervision, and factors of personal life. Factors affecting satisfaction in teachers were generally different from those affecting accountants and engineers (original study).

Howard Gendel's work is said to have provided solid statistical evidence for the theory (26). Gendel's subjects were 119 Veterans Administration hospital housekeepers. Analysis of the data revealed the following significant motivators: recognition, advancement, and responsibility. The significant hygienes were: salary, working conditions, interpersonal relationships with peers, and company policy and administration.

Elizabeth Walt (26) made a replication of the original study and again the overall results verify the theory. With fifty professional women employed by the United States government, four of the motivators--achievement, work itself, responsibility, and recognition appeared significantly more often when job satisfaction events were listed. Company policy and administration, status, working conditions, and factors in personal life were the prevalent hygienes.

Saleh (54), working with a sample of eighty-five male employees at managerial levels in twelve companies, found the following significant factors: motivators--achievement, work itself, responsibility, and advancement; hygienes--company policy and administration, supervision, interpersonal relationships with superiors, peers and subordinates.

George Allen (2) replicated the original study--commercial bank employees served as subjects. Four hypotheses were tested:

1. Motivators are primarily related to job satisfaction.
2. Hygienes are primarily related to job dissatisfaction.
3. Hypotheses 1 and 2 are applicable to supervisors and non-supervisors, and
4. Hypotheses 1 and 2 are applicable for all age groups.

All hypotheses were supported by the data and thirteen of the sixteen job factors differed in the predicted direction with statistical significance. No reversals of the theory occurred.

Anderson (26) replicated the original study with three samples of workers. His samples and those factors emerging which either reached or approached significance are shown.

	Professional Nurses (N = 29)	Maintenance Services Employees (N = 31)	Food Service Wrks. (N = 35)
Motivators			
	Recognition	Recognition	Recognition
	Achievement	Achievement	Responsibility
		Possibility of Growth	
Hygienes			
	Comp. Policy & Administration	Comp. Policy & Administration	Comp. Policy & Administration
	Interpersonal Rels. w/superiors	Supervision	Supervision
	Working Conditions		Interpersonal Rels. with Peers

Using the sequence of events method, Denzil Clegg (26) carried out a study with a population of fifty-eight county agricultural administrators. Upon application of data analysis the overall theory (two-factor) was verified. With respect to motivators, achievement and recognition were significant in the direction predicted. Six hygiene factors were significantly evident. They were: company policy and administration, working conditions, interpersonal relationships with subordinates and with peers, supervision, and factors of personal life.

Myers, in 1964 (47), replicated the original study and included in his sample 232 male scientists, engineers, manufacturing supervisors, and hourly technicians, and 52 female hourly assemblers. Those factors found to be significant are shown below:

	Scientists	Engineers	Manufacturing Supervisors	Hourly Tech.	Hourly Assemb.
Motivators					
Achievement	X	X	X	X	X
Recognition			X	X	X
Responsibility				X	
Hygienes					
Comp. Policy & Admin.	X	X	X	X	
Supervision	X	X		X	

Sergiovanni (57) set out to answer the same questions (in the main) as this study; however, his sample was of public school teachers and the bases for comparison were different. Sergiovanni wanted to know if there existed a set of factors which tended to satisfy teachers and another set which tended to dissatisfy them, or are the factors arranged on a conceptual continuum with each factor capable of being a potential satisfier or dissatisfier? Using a sample of forty teachers, Sergiovanni employed the sequence of events method and found that achievement and recognition were factors that contributed primarily to teacher job satisfaction, while interpersonal relations (w/subordinates), (w/peers), technical supervision, school policy and administration, and unfairness were factors which contributed predominately to teacher dissatisfaction. Sergiovanni concluded that the results tended to support the generality of Herzberg's findings.

Johnson (34) sought to identify the factors associated with periods of low job satisfaction and with periods of high job satisfaction and then compare the findings with Herzberg's study. A sample of 415 teachers in a county school system were given a questionnaire consisting of two open-ended questions [describe a time when you felt exceptionally good (bad) about teaching] and fifty-six items referring to events in the educational environment. The results generally supported Herzberg's findings. The factors of achievement, interpersonal relations, recognition, work itself, and responsibility had statistical significance in affecting teacher satisfaction ($P<.05$). The factors of company (school) policy and administration, working conditions, status, and factors of personal life had statistical significance in affecting teacher dissatisfaction ($P<.05$).

After reviewing the research concerning motivators and hygienes, Burke (7) concluded that: factors leading to job satisfaction are different from, and not merely opposite to, factors causing job dissatisfaction. This conclusion is supported by the original Herzberg investigation and studies conducted by Schwartz, Jenusaitis, and Stark (56). With 111 male supervisors from 21 public utilities companies the following factors were evident: motivators--achievement, recognition, responsibility, advancement, and possibility of growth; hygienes--company policy and administration, working conditions, and security.

In summary, it can be said that all of the above studies support the Herzberg theory to some degree, although a few specific factors (achievement, recognition, company policy and administration, and supervision) exhibit primacy within their respective constellations. There also appears to be somewhat wide variation in significant factors from job type to job type although no specific pattern is evident.

Two-Factor Theory: Negative Evidence

Following is a report of those studies whose findings do not support the Two-Factor Theory. Some of the studies gave rise to conclusions which strongly supported the traditional theories of job attitudes.

In a study involving 167 male and 152 female office workers employed by a single corporation, Graen (22) used the scales of the Job Description Index to measure satisfaction with work itself, promotion and pay--and he used the General Motors Faces Scale to measure overall job satisfaction. Based on analysis of variance, results indicated that not only were two-factor predictions unconfirmed but three out of four misses were in the opposite direction. This is very negative support for Herzberg's theory.

A number of hypotheses for which the Herzberg theory and traditional unidimensional theory make different predictions were tested by Ewen, et. al. (13). The intrinsic variables (motivators) were work itself and promotion, and the extrinsic variable (hygiene) was pay. Neither the Herzberg theory nor the traditional theory was supported by the data. Instead, results indicated that intrinsic factors are more strongly related to both overall satisfaction and overall dissatisfaction than the extrinsic factor, pay, and suggest that functioning of the extrinsic variable may depend on the level of satisfaction with the intrinsic variables.

Graen and Hulin (23) used a procedure that granted the assumption of the two-factor theory of a dimensional difference between overall satisfaction and dissatisfaction. Instruments employed were designed to capitalize on any unique variance associated with the dissatisfaction or the satisfaction dimension. Analysis consisted of one-way analysis of variance of the Job Description Index variables of work itself, promotion, salary, supervision, and co-workers on overall satisfaction and dissatisfaction. Satisfier variables (work itself, promotion) had significant F-ratios on both satisfaction only and dissatisfaction only dimensions. Dissatisfier variables (co-workers, salary, supervision) were significant on satisfaction only. Results do not support Herzberg to any degree.

Halpern (24), in 1965, using a sample of ninety-three male college graduates working in various occupations, obtained ratings of satisfaction with four motivators and four hygienes, and overall job satisfaction with four motivators and four hygienes, and overall job satisfaction on the respondents' best-liked job. Respondents were equally satisfied with motivator and hygiene aspects of their jobs; however, motivators contributed most to overall job satisfaction.

Lodahl (41) factor analyzed data obtained from content analysis of interviews with fifty male auto-assembly workers and twenty-nine female electronics-assembly workers. Two technological factors and three attitude factors emerged; two of the three attitude factors resembled motivators and hygienes.

Wernimont's sample of fifty accountants and eighty-two engineers responded to forced-choice and free-choice items in relating self-descriptions of past satisfying and dissatisfying job situations (67). More motivators than hygienes were used to describe both situations. It was concluded that both motivators and hygienes can be sources of job satisfaction and job dissatisfaction.

Lindsey (40), using a job attitude questionnaire with 135 professionals and 135 non-professionals, found that the classes of job factors known as motivators and hygienes in the Herzberg theory, can be used to describe most of the variance in job satisfaction. Motivators were found to be more important in regard to job satisfaction than dissatisfier hygienes on a three to one ratio.

The purpose of Burke's investigation (7) was to test the assumption that Herzberg's two classes of factors affecting job satisfaction and dissatisfaction represent unidimensional constructs.

Subjects were 187 female and male college students who ranked the importance of five motivators and five hygienes. The unfolding technique in one dimension developed by Coombs was then applied to these preference orders. The results clearly indicated the absence of a unidimensional attribute underlying both the motovators and hygienes and suggests that Herzberg's two-factor theory may be an oversimplified representation of job satisfaction.

Eighty students in two psychology courses rated the importance of eighteen variables to job satisfaction and job dissatisfaction. The findings indicated that motivators and hygienes are not opposite ends of a common set of dimensions and most characteristics seemed to contribute to both satisfaction and dissatisfaction. This investigation was conducted by Friedlander (15).

Gordon (20), using a fifty-four-item, four-scale instrument with 683 insurance agents, obtained results that conflicted with the theory. Motivators and hygiene factors did not align with most satisfied and most dissatisfied subjects.

Rosenfeld (53) administered an attitude questionnaire to three levels of employees at a mining company. His results indicated that Herzberg's motivators do form a separate dimension in the structure of morale for each job class. Rosenfeld interpreted this as being just one of several dimensions and by no means independent.

Friedlander (16) with a sample of 600 engineers, supervisors;

and salaried employees of a manufacturing company, factor analyzed responses to a job satisfaction questionnaire. Three factors emerged, two of which corresponded with motivators and hygienes while a third was related to both motivators and hygienes.

Levine and Weitz (39) conducted a survey of job satisfaction among graduate students in two universities. When responses were factor analyzed, first and second order factors did not indicate an intrinsic or extrinsic dimension nor did the findings support a two-factor theory of job satisfaction.

Weissenberg and Gruenfeld (66) investigated the relationship between motivator and hygiene satisfaction variables to job involvement. Subjects were ninety-six male state civil service supervisors who completed the Wernimont Job Satisfaction Scale and a job involvement measure developed by Lodahl and Kejner. The results indicated that motivator, not hygiene, variables correlated with job involvement. In addition, total motivator satisfaction scores accounted for considerably more variance in overall job satisfaction than did hygiene variables.

Ewen (12) factor analyzed responses on a fifty-eight-item attitude scale given to a sample of life insurance agents. In brief, six factors emerged but most tended to load in both motivator and hygiene dimensions.

Centers and Bugental (8) selected a cross-section of the working population (N = 692) and interviewed them with respect to their job motivations. Respondents were asked, "Which of the following things (motivator and hygiene variables) helps you to stay on the job?" The extent to which motivator or hygiene job components were valued was found to be related to occupational level, motivator job components being more valued. At lower occupational levels, hygiene job components were more valued. No sex differences were found in the value placed on motivator or hygiene factors in general.

Friedlander (14) factor analyzed a fourteen-item questionnaire measuring the importance of various job characteristics to satisfaction and dissatisfaction. The sample consisted of 1,468 civil service workers from three status levels (low, middle, and high GS rankings) and two occupational levels (white-collar and blue-collars). The motivators and hygienes were aligned according to work group with white-collar workers deriving greatest satisfaction from motivators and blue-collar workers deriving greatest satisfaction from hygienes.

McGreal (43) devised a questionnaire composed of motivator and hygiene items and administered same to two groups of teachers. One group had resigned from a particular school district within the past three years and had identified some organizational variable as the prime cause for their resignation. The second group had been on the job in the same school for at least three years and had been rated as being highly satisfied with their work. The investigator concluded that the factor analysis performed indicated that presence of general feelings of satisfaction and dissatisfaction that were evident when the percent of variance accounted for by each of the factors was analyzed tended to cast doubt on the acceptance of Herzberg's theory.

Ott (49) constructed a 115-item questionnaire based on the findings of Herzberg. The questionnaire was designed to test the generality of Herzberg's theory. The scores of 343 telephone operators were factor analyzed and the five most interpretable factors that emerged were: I. Job Context Factor--the major source of job satisfaction, primarily dealing with considerate and competent supervision; II. Consisted of items dealing with evaluation of present supervision; III. also a job context factor, the major source of job dissatisfaction--primarily dealing with lack of considerate and competent supervision; IV. consisted of items dealing with both satisfaction and dissatisfaction in terms of company policies, benefits, and environmental conveniences; V. another context factor dealing with dissatisfaction due to inconsiderate customers. Ott concluded that the sources of job satisfaction and dissatisfaction were not necessarily independent as Herzberg had concluded.

In a study by Waters and Waters (65), the degree of overall satisfaction, overall dissatisfaction, and overall satisfaction/dissatisfaction were correlated with measures of satisfaction/dissatisfaction with several aspects of the work situation of 160 female clerical workers of one company. Responses to open-ended questions concerning reasons for positive and negative feelings about their company were also tabulated. From analyses of correlations, it was found that the patterns of correlations for the various aspects of the job were very similar whether satisfaction, dissatisfaction, or satisfaction/dissatisfaction was used as the measure of overall attitude about the job. Motivators performed as both satisfiers and dissatisfiers, and hygienic factors were related to both satisfaction and dissatisfaction.

Graen (21) sought to develop psychometric measures of Herzberg's job factors. A questionnaire was developed based upon Herzberg's classification scheme. The subjects were engineers. Results indicated that the dimensions proposed in the two-factor theory when represented by items and rated by subjects do not result in homogeneous groupings in factor analysis.

Realizing that many studies disregarded Herzberg's contention that motivators and hygienes were separate entities and did not contribute to overall job satisfaction, Hulin and Smith (33) sought to test empirically the two-factors using two separate (but similar in conception) scales of the General Motors Faces Scale. Subjects were 680 employees of one company. Analysis of the data revealed that the so-called motivators acted as both satisfiers and dissatisfiers and the hygienes acted as satisfiers and as dissatisfiers.

From examination of the above studies it seems that the criticism of Herzberg's theory being method-bound is not unfounded. Several of the studies utilizing different designs and techniques than those of the original study exhibit quite different results than those obtained by Herzberg. For example, a given factor was found to cause job satisfaction in one sample and job dissatisfaction in another sample and vice versa. In some samples a given factor was found to cause both satisfaction and dissatisfaction. This is noted in the studies of Friedlander (15), Waters and Waters (65), and Hulin and Smith (33). Graen found a backward alignment of factors (22). In his review of the literature, Burke (7) also noted such discrepancies. House and Wigdor (32:375) analyzed replications of Herzberg's original study and report that some motivators are actually reported as being dissatisfiers more often than one of the hygiene (working conditions) factors.

Concerning more methodological issues, Vroom (64) has been critical of Herzberg's theory. Vroom holds that Herzberg's findings may be the result of his method of data collection. He also contends that people may be more likely to attribute their dissatisfaction with the job to factors in the work setting and not to personal deficiencies or inadequacies. House and Wigdor (32) contend that the interpretation of the responses by raters rather than by the actual respondents may be a serious procedural deficiency. They also maintain that inadequate operational definitions were used in identifying satisfiers and dissatisfiers. Hinrichs and Mischkind (29) said that Herzberg's data do not accurately test his own notion because the research was not based solely on current satisfaction with a presently existing job situation. Herzberg (as well as others who replicated his work) asked his subjects to think of a time when they were particularly happy or unhappy with their job, whether it be their present job or any other job they may have had.

Ewen (12) points out what he believes to be several deficiencies in the methodology of the Herzberg study. These are: the use of only one measure of job attitudes, the narrow range of jobs investigated, the absence of validity and reliability data, and the lack of any measure of overall job satisfaction. A great deal more research employing many different types of designs will have to be performed before either the proponents or the opponents of the two-factor theory can rest. Whitsett and Winslow (68) point out that many of Herzberg's critics have employed research designs that were mainly concerned with the examination of only two or three of the factors in question (there are 16 factors), which they believe to be inadequate representation of the theory. In addition, many of the critical studies use measures of overall job satisfaction to help explain away the theoretical bases of the original study. Whitsett and Winslow say this is contrary to the basic roots of the theory. The theory does not make statements concerning overall job satisfaction--in fact, its very essence (two sets of job factors) negates the possibility of overall satisfaction. The two kinds of factors are independent and operate in different needs systems.

Summary

The review of related research clearly demonstrates that Herzberg's theory has generated a great deal of interest in the assessment of job attitudes.

The proponents of the theory tend to rely on research designs which are identical to, or differ only slightly from, the design employed in the original investigation.

Those researchers who seek to validate the theory using any one of a variety of methods and designs different from sequence of events point out, in general, that these attempts at validation by no means give rise to conclusions which strongly support Herzberg's theory. On the contrary, many of these researchers interpret evidence which they say negates the two-factor theory. Such evidence tends to support the traditional theory of job attitudes which places job attitudes for any individual along a satisfaction--dissatisfaction continuum. Such interpretations are in direct opposition to Herzberg's theory.

CHAPTER III

RESEARCH DESIGN AND PROCEDURES

Sample

The sample was composed of academic faculty, occupational faculty, and administrative personnel and was drawn from two of Florida's public community junior colleges. Both colleges began operations during the same year in the 1960's, hence age of institution was controlled. College A is in an urban center (see Definitions) and has over 7,000 full-time equivalent students; College B is in a sub-urban-rural area (see Definitions) and has over 2,500 full-time equivalent students. All administrators, academic faculty, and occupational faculty (and Counselors) were given an opportunity to participate in the study. In no case were fewer than fifteen subjects permitted to compose a sub-sample. In this case, the minimum number of subjects could have been ninety (15 Ss per sub-sample, six sub-samples).

Instrument

A copy of the actual instrument appears in Appendix A. In each instrument, preceding the actual items comprising the body of the instrument, are a series of fill-in-the-black and multiple-choice questions which serve to identify the subject as well as provide descriptive data which may serve to clarify the results of statistical tests and procedures.

Each subject was instructed to answer the following items: (1) Name of Institution; (2) Employment Category--a. Full-time Occupational Faculty, b. Full-time General Education or College Transfer Faculty, c. Full-time Administrator, d. Full-time Counselor; (3) Sex; (4) Age: 23-29, 30-40, 41-50, 51-60, over 60; (5) Years Experience in Junior College (any junior college): 1-3, 4-8, 9-14, 15-25, more than 25; (6) Years' Experience in Education (K-12, univ., etc.): 1-3, 4-8, 9-14, 15-25, more than 25; (7) Level of Education: Bachelor's, Master's, Master's plus 30, Master's plus 60, Doctorate, Other (A. A., R. N., etc.). Responses to such items were easily converted to coded values for data processing.

The technique selected for use in gathering the essential data to be used in the testing of hypotheses was the semantic differential as developed by Osgood, et al. (48). The reasons for the selection of this technique are many. In terms of the major problem posed by this investigation, the semantic differential was employed as a methodological departure from the sequence of events technique (and other methods) and to provide a foundation of empirical data on which to base factor-analytic solutions and statistical manipulation. The technique has been shown to satisfy conventional requirements in terms of reliability and at least "face validity" can be assumed. In addition, the format for organizing the semantic differential as well as the instructions accompanying the instrument have been more or less standardized through experimental use over the years. The technique leads itself to experimental use by virtue of its adaptability and flexibility. Other considerations playing a role in its selection were: ease of administration, low cost, economy of subjects' time for responding to items, and ease of scoring.

The semantic differential "...is a very general way of getting at a certain type of information, a highly generalizable technique of measurement which must be adapted to the requirements of each research problem to which it is applied. There are no standard concepts and no standard scales; rather, the concepts and scales used in a particular study depend upon the purpose of the research" (48:76).

The semantic differential consists of a number of rating scales, each of which is a seven-point bipolar adjective pair, in this case chosen from Osgood's list of evaluative scales. The evaluative dimension of the semantic space (Osgood, et. al. labeled three factors as comprising the greatest amount of variance in the semantic space: evaluation, potency, and activity) contains evaluative adjective pairs that have the highest factor loadings and account for more variance than other pairs on other factors. The eight scales chosen had loadings of at least .81 on the evaluative factor and no loading greater than .15 on activity and/or potency factors (59:48). Due to the fact that the selected pairs accounted for more variance and had higher loadings, it was determined that only these evaluative adjective pairs would be utilized in items. Since a basically evaluative factor structure was being sought, it was assumed that adjective pairs from the potency and/or activity domains, if included in computations, might contaminate or confound the basic underlying evaluative factor structure should one exist. It was also assumed that subjects would not be able to determine that all adjective pairs were of the evaluative domain, hence no pairs from other domains were used. Adherence to the use of only eight evaluative adjective pairs allowed the instrument to consist of a minimal number of items, and allowed for quicker scoring and easier handling. It must be remembered that the inclusion of any additional adjective pair involved the addition of a number of individual items (in this instance, eight) in order to maintain balance as well as to comply with the basic semantic differential format. It can be seen that the number of items would indeed become great should many pairs from the other domains be added to those evaluative items in the instrument. In addition, Osgood, et. al. (48:131) demonstrate clearly that the evaluative scales yield much smaller errors of measurement than scales from the other domains.

The concepts used with the set of evaluative scales were from Herzberg's list of First Level Factors. Factors selected under motivator and hygiene constellations are those which have been found to have been reported with the greatest frequency in the literature.

That is, in the body of research dealing specifically with the motivator-hygiene theory, the following eight job factors emerge as being those most frequently reported as having been found. There are four motivators and four hygienes, they are:

motivators	hygienes
advancement	company policy and administration
recognition	relationships with superiors
responsibility	supervision
the work itself	working conditions

The concept phrase "college policy and administration" was substituted for "company policy and administration." Other than that modification, the concepts and concept phrases listed above were included in the instrument. as is. The instrument is found in the Appendix.

To combat response bias tendencies, the ordering of concept-scale was deliberately rotated. Each capitalized concept or concept phrase appears on the same line as the scale against which it is being judged, and the items are ordered in such a way that a maximum number of different concepts and scales occurs between repetitions of each concept and scale. That is to say, each of the eight concepts or concept phrases (motivators and hygienes) is paired with each and every evaluative adjective pair. Having been selected at random, one-fourth (16) of the sixty-four polar adjective pairs were reversed so as to further counteract response bias tendencies.

Scoring

Scores were derived from the assignment of integral weights

(1-7) to each position on the seven-point rating scales (48, Chap. 3). The value of one (1) was assigned to that checkpoint on the end of the scale being representative of the negative extreme, while the value of seven (7) was assigned to that checkpoint on the end of the scale being representative of the positive extreme.

The actual instrument was printed on both sides of two sheets of 8-1/2 x 11 inch paper. The instructions, taken from Osgood, et. al. (48:82) and modified, were also included in this four-page document (see Appendix).

According to the coding system established, the seven descriptive items on page one of the instrument were easily hand-scored. In order to score correctly those sixteen items which had been randomly selected for scale reversal, three scoring templates were constructed from cardboard sheets. This construction consisted of locating the reversed items on the template using an actual copy of the instrument as a guide, cutting slots in the scoring templates in the appropriate locations, and marking over the slots the values from one to seven so that appropriate numerical scale value corresponding to the subjects' check-mark could be easily entered directly onto the instrument. Thus, each fully completed instrument was processed as follows:

1. descriptive questions were assigned coded values
2. templates were applied to the appropriate pages and responses scored, in ink, on the instrument
3. remaining items were scored.

When the scoring was completed, each instrument provided a total of seventy-one numerical values ranging from 0-7; that is, seven descriptor values and sixty-four item values. These values were key-punched onto standard eighty-column data cards, one card for each subject. In columns 1-7 were punched the descriptor values, and in columns 11-74 were punched the item values.

In order to include as many completed instruments in the sample as possible, it was determined that if a subject left no more than three items (approximately 5 percent of all items) blank, his median scale score value over the completed items would be entered in each of the blank spaces.

Objectivity

The method employed here and the use of the semantic differential is explicit and easily replicable. The instrument format is designed in the manner that is suggested by the originators of the technique (48, Chap. 3). While interpretation of results requires subjectivity, the method of gathering the data essential for interpretation is both objective and replicable.

Reliability

Osgood, et. al. (48:126) refer to more than one type of reliability. Item reliability refers to the consistency of reproducibility of individual item scores, while factor-score reliability refers to consistency of items falling within a particular domain. Item reliability is the more essential characteristic, it appears, in this investigation. In Osgood's first factor analytic study involving 1,000 items, 40 items sampled from the total of 1,000 items were repeated on a page at the end of the instrument. This sample included 40 different scales and each of 20 concepts (each appearing twice). Since none of the subjects indicated their awareness of some items being repeated, the researchers assumed that their check for reliability went unnoticed. Test and retest correlation over the 40 items (number of subjects was 1,000) was .85 (48:126). Osgood, et al. (48:131) also determined that average errors of measurement of semantic differential scales are always less than a single scale unit. This average value approximates about three-fourths of a unit. Errors of measurement for evaluative scales average about one-half of a scale unit.

Validity

The area of validity is an area of weakness in this investigation and in similar investigations involving the attempt to place bounds and limits on the notion of "meaning" in an individualistic sense. Osgood, et al. clearly indicate that criterion measures for gauging levels and degrees of meaning are not available and that they have fallen back on what is usually termed, "face validity" (48:140). Face validity would be assessed by having the subject report his judgements of particular things and then ask if his own judgments correspond with particular samples of discriminations made with the aid of the instrument. Face validity is actually a measure of subjective "reasonableness" formed from the comparison of stated judgment with that judgement indicated on the instrument.

This notion is stated in other words by Cronbach (11:141).

Validity in terms of semantic differential responses correlating with external criteria has been evidenced in many individual investigations. Osgood, et al. (48:141) mention one particular investigation in which an examination of voter preferences before the 1952 presidential election using the semantic differential discriminated between voters for each major candidate at the .05 level of significance. An examination of the research has revealed that external validity has been established in many individual cases however, this validity has been confirmed almost exclusively with the evaluative factor.

Validity of Certain Scaling Assumptions

Osgood, et al. (48:146) point out that there are two basic assumptions dealing with the scaling methodology employed in the semantic differential. One, it is assumed that the seven-point scale is composed of seven equal intervals and two, it is further assumed that the zero point or the point of non-directionality is centered in each individual scale. This latter assumption must be met at least approximately according to Osgood or factor analytic results based on these scales may give rise to seriously distorted factor structures.

It was fortunate that a dissertation (48:152) by Norman Cliff provided strong evidence for the validity of these assumptions. In Cliff's dissertation, he was able,

> ...to show that adverbs like _very_, _somewhat_, _decidedly_ and so forth, combine multiplicatively with adjectives like _evil_,

> ordinary, charming and the like in determining the scale locations of judgments of their combinations along an 11-step scale running from 'most unfavorable' to 'most favorable'. Most significant from our point of view was the fact that the adverbial quantifiers slightly, quite and extremely (which define the three degrees of intensity in using the semantic differential) proved to yield almost perfectly equal increasing degrees of intensity, 0.50, 1.00, and 1.50 respectively. Our choice of these quantifiers in our instructions was thus most fortunate, although entirely intuitive. (48:156)

It would appear then that the assumptions involving scaling and the semantic differential are not without foundation and not without support.

Distribution of the Instrument

Permission to conduct the investigation was granted by the presidents of the two selected institutions and the details of the investigation were discussed with research personnel at both institutions. The administrative officer for institutional research at College A (urban) agreed to coordinate the distribution and collection of the instrument on his campus, while the investigator attended to these same functions at College B.

A cover letter (indicating: the purpose of the investigation, the data by which the instrument was to be returned, the anonymity of responses to the instrument, and that the investigation had the approval of the appropriate college officials) --was attached to each distributed instrument.

A total of 275 instruments were distributed through on-campus mail procedures at College A, and 160 instruments were distributed by the same means at College B.

Treatment of the Data

The treatment of the data is designed to serve two major purposes; first, do the sixty-four responses derived from the concept scores, when factor analyzed, form factors which are consistent with Herzberg's theory, and second, on the basis of factor scores derived from the particular factor structure interpreted as being most definitive--do sub-samples differ significantly?

All statistical computations were carried out at the University of Florida Computing Center utilizing the IBM 360/65 electronic computer and programs prepared for the University of Florida Educational Evaluation Library.

As explained earlier, the adjusted raw score data were punched on standard eighty-column data cards, one card for each subject with the sixty-four scale scores placed in columns eleven through seventy-four.

The mean and standard deviation for all items across subjects (N = 160) was to be calculated in order that individual item distributions could be examined for skewness. Should some extremely skewed distributions have resulted, an appropriate adjustment could have been made in the treatment process.

All responses for any given item were normalized by means of a T-transformation (Mean approaching 50, standard deviation approaching 10).

This was done in order to have individual item response distributions conform more closely to a normal distribution, to further examine the possibility of extreme skewness, and to make interpretation via visual inspection easier. This transformed data were printed on paper as well as on cards.

These data in T-score form were subjected to Program EEL 501 (University of Florida--Educational Evaluation Library), which is a program that performs three separate but integrated series of manipulations: first, a correlation matrix is established; second, the principal-factor solution is computed; lastly, the factor matrix extract is rotated to Varimax criterion (35). In this case the rotation was from two through nine factors.

Next, an oblique criterion was applied; rotations of two through nine factors. This was to serve as a check on the orthogonal criterion and to explore the notion of job factors being evidenced in more than one type of factor solution. It would appear that an oblique criterion would not detract from Herzberg's notion of two separate factors, in the theoretical sense.

Once the data had been analyzed and interpreted--and one particular factor matrix (orthogonal or oblique) had been selected as most descriptive of the overall factor structure, factor scores for each subject (per factor) were calculated in order to provide the data essential for the examination of the possibility of significant differences between various sub-samples as put forth in the hypotheses. This was achieved by first subjecting factor scores of individuals within sub-samples to one-way analysis of variance (across factors) in order to determine whether or not sub-samples are significantly different in terms of factor scores based on the selected factor structure. Lastly, Duncan's Multiple-Range Test was employed to test all possible mean differences in the examination of each hypothesis.

CHAPTER IV

ANALYSIS OF DATA

The data were obtained through the administration of the semantic differential to the faculty and administrators of two selected public community junior colleges in the State of Florida.

In this case the semantic differential consisted of eight concepts or concept phrases, four of which were selected as being representative of Herzberg's "motivators" and four that were selected as being representative of Herzberg's "hygienes." These eight entities were paired with each of eight evaluative adjective word pairs--each pair being polarized at the extremes of a seven-point rating scale. Hence, an instrument resulted having a total of sixty-four items. The subject was to rate each combination of concept--word pair on the seven-point scale. Each scale was regarded as an individual item.

The reliability, validity, objectivity and rationale underlying the semantic differential were discussed in the previous section. While validity is shown to occur in specific instances, primarily in attempts at prediction, the notion of "face-validity" must suffice in this case. Reliability, objectivity and other conventional aspects of testing (within its role in the behavioral sciences) are assumed to be in evidence in this investigation as the traditional format for the semantic differential technique was strictly followed.

The instruments were distributed through the on-campus mail system at the two colleges and were returned to each campus coordinator by the same means. A cover letter stated that all completed instruments must be returned within seven working days.

Sample

The population from which the sample was drawn consisted of all faculty and administrators from two of Florida's public community junior colleges. One college was designated as "urban," the other college, "sub-urban." Both institutions can be considered as comprehensive community junior colleges in that both offer a substantial range of occupational programs as well as community interest programs and courses. This is in addition to the college transfer programs and courses. Both colleges operate on the basis of multi-campus organizational structure, as well.

The sampling technique used was the "shotgun" or sample of opportunity technique in which all faculty and administrators were given an opportunity to complete and return the instrument. Each college was sub-divided into three sub-samples: academic faculty, occupational faculty, and administrators. It was determined that no fewer than fifteen usable returns per sub-sample would be permitted. While the sample of opportunity approach is probably one of the least defensible sampling methods, it must be noted that the investigation is exploratory in nature. In actuality, it would appear that a more accurate description of the sampling technique would label it "stratified sample of opportunity" since specific segments of the population were expected to contribute a given level of returns.

Due to the possibility that the instrument may have been construed by subjects as potentially threatening (as was shown to be the case in similar studies dealing with a person's job and its characteristics), it was determined that complete anonymity would be granted to respondents. Hence, no follow-up on returns was carried out.

Table 1 contains the numerical information pertaining to the distribution and return of the instrument.

Of the 435 instruments distributed at both colleges, 174 were received within seven working days, representing a 40 percent return. Of those instruments returned, over 90 percent were useable and only 14 instruments had to be eliminated due to incompleteness. The six sub-samples ranged in size from 15 to 54. While the sampling methodology has its faults and limitations, the equality of percent of instruments returned (40 percent) between colleges should serve as a means of control although this outcome was not planned.

It can also be seen in Table 2 that administrators generated the greatest percentage of useable returns while teaching faculty generated the smallest percentage of useable returns.

It should be noted at this point that the employment category, "Counselor," was included in the identification section of the instrument

TABLE 1

INSTRUMENT DISTRIBUTION AND RETURN

College w/ Sub-Samples	No. Instr. Distrib.	No. Instr. Returned	Return as % of Dist.	No. Useable Returns	Use. Ret. as % of Distrib.	Use. Ret. as % of Instr. Ret.	No. of Unuseable Returns
College A							
Academic Faculty	145	-	-	54	.37	-	-
Administrators	60	-	-	25	.42	-	-
Occupation Faculty	70	-	-	23	.33	-	-
Totals	275	110	.40	102	.37	.92	8
College B							
Academic Faculty	88	-	-	22	.25	-	-
Administrators	32	-	-	21	.65	-	-
Occupation Faculty	40	-	-	15	.38	-	-
Totals	160	64	.40	58	.36	.91	6
Grand Totals	435	174	.40	160	.37	.92	14

TABLE 2

INSTRUMENT DISTRIBUTION AND RETURN
--COMBINED SUB-SAMPLES--

Combined Sub-Samples	No. Instr. Distributed	No. Useable Returns	Useable Ret. as % of Dist.
Academic Faculty	233	76	.33
Administrator	92	46	.50
Occupational Faculty	110	38	.34
Totals	435	160	.37

(see Appendix). It was decided that should a large enough number of counselors respond to the instrument, the counselors, collectively, could serve as a combined college sub-sample in the testing of hypothesis no. 7. Since only three counselors from each of the two colleges responded, these few instruments were not included in the statistical manipulations.

In reference to essentially complete instruments with fewer than four blank item responses only 9 of the 160 useable instruments contained blank spaces. In no case did an instrument contain more than one blank space. The median scale value of the entire instrument was assigned to the blank space in each individual case. Since different individual items were left blank in all cases, it was assumed that these items were merely overlooked and not deliberately left blank.

The Problem Analyzed

The major purpose of this investigation was to attempt to determine the extent to which community junior college personnel (faculty and administrators) exhibit constellations of job attitudes consistent with Frederick Herzberg's Motivator-Hygiene theory when a methodological approach different from sequence of events was utilized. It was thus hypothesized that when motivator and hygiene concepts were incorporated into the semantic differential technique, community junior college personnel would respond in a manner that would not give rise to the emergence of two distinct factors, that is, one factor composed of motivator concepts and another factor composed of hygiene concepts.

The semantic differential technique, which is capable of yielding empirical data, was selected as the means for assessing job attitudes as they relate to eight of Herzberg's First Level Factors. The data provided by the semantic differential were subjected to factor-analytic solutions to determine the nature of the underlying factor structure, should one exist.

Tests for differences among sub-samples were to be carried out on the basis of factor scores derived from the particular rotation interpreted as "best," in terms of clarity and meaningfulness.

Factor Analysis

Harman says that, "Factor analysis is a branch of statistical science, but because of its development and extensive use in psychology the technique is often mistakenly considered as psychological theory" (25:3). Fruchter (17:1) adds that,

> Factor analysis starts with a set of observations obtained from a given sample by means of such *a priori* measures. It is a method of analyzing this set of observations from their inter-correlations to determine whether the variations represented can be accounted for adequately by a number of basic categories smaller than that with which the investigation was started. Thus data obtained with a large number of *a priori* measures may be explained in terms of a smaller number of reference variables.

One can now look to Bailey (3:2) who summarizes,

> Factor analysis seeks, as a general scientific method, to determine the underlying order of the domain, as represented by the specific variables under consideration, to assist in the formulation of general scientific concepts about the domain.... The necessary and sufficient assumption to factor analytic methodology is simply that the underlying principles are fewer than the number of data variables involved in the study.... Factor analysis is exploratory in character.

Factor analysis then, serves to analyze common variance in order to determine the number and types of common variances which result in the correlation between variables (17:45). That is, the sixty-four variables in the semantic differential, when found to be inter-correlated, may yield one or more common reference factors. From sixty-four separate variables we may find some few inter-correlated variables which share a large proportion of common variance. Harman states, "The chief aim is to attain scientific parsimony or economy of description" (25:2).

Fruchter serves to further clarify by stating, "Factors are not eternal verities, they merely serve to represent the fundamental underlying sources of variation operating in a given set of scores or other data obtained under a specific set of conditions" (17:4). The above remarks and quotations serve to explain briefly the basic nature of factor analysis. Considerations which are of a more operational nature are discussed below.

Data Preparation

From each of the 160 useable instruments came 71 numerical values. The seven descriptive variables consisted of values ranging from zero to six, while the sixty-four item values ranged from one to seven. The descriptive variables and their corresponding values are represented in tabular form preceding discussion of each of the seven hypotheses posed.

Means and standard deviations were calculated for each of the sixty-four variable distributions (see Appendix). In order to avoid having to adjust for skewed distributions when tests for significance were applied (parametric), it was decided to transform the raw-score distributions to T-score distributions where normality of distributions could be assumed. Although an area transformation may be employed to manipulate the form of a distribution in any desired way, it is typically used as a normalizing transformation. The T-scale enables the experimenter to have a standard score scale much like that of the z-scale. The T-scale approximates the normal distribution regardless of the form of the original raw-score distribution. Because of this normalization, any given T-value will have a comparable percentile rank which allows for uniformity and ease of interpretation. The T-scale will have the value of fifty (50) for its standard mean and ten (10) for its standard deviation. Individual T-scores are derived by determining the percentile rank of the raw score (X), and then multiplying the z value of the same percentile rank (taken from normal curve approximate values) by ten then adding this product to fifty (5; Chap. 8). T-score distributions were calculated for each of the sixty-four variables and each of the individuals responses were transformed to T-scores. These derived scores are those which were subjected to the factor analytic solutions. Rather than range from one to seven (1-7), the score values now range from three to seventy-one (3-71), and the sixty-four distributions are assumed to be normal.

Factor-Analytic Methodology

Bailey (3:3) succinctly describes the basic nature of the factor-analytic methodology employed in this investigation:

> Factor-analysis may be considered a system of sequential analyses, a system which consists of three distinct steps. Typically, first a correlation matrix is formed of inter-relationships among variables over a sample or group of subjects. This is then operated on by one of a variety of methods. . . to produce a multiple-factor matrix which is considered only an initial arbitrary factor solution. A final matrix is achieved by transforming this initial solution into

> another form which, it is hoped, permits a more useful interpretation of the factorization. This transformation process is most often referred to as 'rotation.' Among the various rotation procedures there is first the basic choice between orthogonal and oblique factors, and then the choice between several alternative transformation methods... these considerations lie in the realm of common-factor analysis, i. e., factorization of a correlation matrix which is of a rank less than the number of variables.

The program, EEL 501, of the University of Florida Educational Evaluation Library performs the three steps outlined above. It makes use of a Varimax (35) criterion which is an orthogonal rotational procedure.

To elaborate on the three steps in the sequential analysis outlined above by Bailey, each one of the three steps will be discussed briefly. The first manipulation consists of the intercorrelation of all sixty-four variables. Once the correlation matrix is obtained, the program then solves for the principal-factor method. Harman says, "The principal-factor method can now be considered in its own right as a preferred type of solution, or as an excellent reduction of the correlation matrix which provides a basis for rotation to some other form of solution" (25:156). Harman indicates that this has resulted due to the advent of high-speed electronic computers. He also points out that, "The principal-factor solution is probably the most widely used technique in factor analysis" (25:135). It is for the above reasons that this particular method was selected for this investigation. The popularity, adaptability, and operational economy of this method caused it to appear highly desirable.

Harman adds, "With general availability of computers, a typical approach of many investigators is to obtain a principal-factor solution for an observed correlation matrix, and then transforming it to the varimax multiple-factor solution" (25:107). The above sequence is precisely what occurs in program EEL 501. In this case the Varimax criterion was applied with rotation of two through nine factors.

Bailey (3:9) clarifies the nature of the Varimax criterion,

> Varimax (Kaiser, 1958) places emphasis on simplifying the columns of the factor matrix by maximizing the variance of a factor's squared loadings over all tests (variables). This results in greater simplicity of a factor because its loadings are forced toward unity or zero. Related to the entire factor matrix, the varimax criterion requires the maximization of the sum of all the factors' simplicities. Successive trial locations of all possible m(m-1)/2 pairs of factors determine where this function stabilized at a maximum value. Kaiser found that there was systematic bias in the solution due to the implicit weighting of tests by their communalities. This bias is removed by equally weighting the tests for rotation through the procedure of dividing each row by the square root of the tests communality. The original weighting is restored after rotation. This normalization process, often referred to as 'Kaiser normalization,' is seen in many analytic procedures by the 'h' elements appearing in their criterion formulae.

This rather involved process is intended to result in scientific parsimony. In this case we are dealing with an attempt at reductionism, that is, the drawing out of a few basic "elements" from many separate variables. Hopefully, these procedures will result in a phenomenon referred to as "simple structure." Simple structure refers to the notion of finding, as Thurstone (62:333) puts it, " the smallest number of parameters for describing each test (variable)." Horst expresses

Thurstone's five criteria for simple structure:

> 1. For each factor, only a small number of variables will have high loadings, and the remainder will have low loadings.
>
> 2. Each variable will have appreciable loadings on only a few factors.
>
> For a given pair of factors,
>
> 3. A number of variables will have low loadings on both factors.
>
> 4. Others will have high loadings on one of the factors and low loadings on the other.
>
> 5. Still other variables will have high loadings on the second factor but low loadings on the first.
>
> A factor matrix which has been transformed to meet these criteria may be referred to as simple structure factor loading matrix. (31:385)

Bailey says, "The Simple Structure concept is one (and so far probably the best) way of achieving meaningful final factor solutions" (3:4). Fruchter (17:149) states this in other words,

> After the rotated factor loadings have been obtained, an interesting next step is to try to identify the content and nature of the factors. This is done by inferring what the tests (variables) with high loadings on a factor have in common that is present to a lesser degree in tests with moderate loadings and absent from tests with zero or near-zero loadings. As with all scientific hypotheses, these inferences need to be verified by prediction and further investigation.

Once the factor structure has been identified as being representative of simple structure, the theoretical and hypothetical aspects of the motivator-hygiene (*a priori*) variables can be examined.

Results of Analysis

The data, in T-score form, were fed into the IBM 360/65 electronic computer at the University of Florida Computing Center with the source deck of program EEL 501 (Educational Evaluation Library).

The descriptive data which serve to define the sample of community junior college personnel (N = 160) are found below in Table 3.

TABLE 3

DESCRIPTIVE DATA-- TOTAL SAMPLE

				Years Educ. Exper.			Level of Education	
Sex	N	Age	N	No. Years'	Junior College	Other Levels	Degree	N
Male	106	23-29	49	1-3	110	47	Bachelor's	14
Female	54	30-40	46	4-8	39	45	Master's	73
		41-50	30	9-14	11	30	M. A. +30	26
		51-60	27	15-25	0	27	M. A. +60	20
		over 60	8	over 25	0	11	Doctorate	23
							Other	4
		Median, 30-40		Median	1-3	4-8	Median, Master's	

From the data in Table 3 and the category medians of the same table, a "typical" respondent to the instrument can be described as follows: male, in the 30-40 age range with from one to three years' experience in a junior college and from four to eight years' experience (overall) in education. . . he also possesses a master's degree.

The Varimax criterion when rotated on two through nine factors yielded eight factor matrices. The oblique criterion ✓ (simple loadings) generated the same number of arrays. Since the oblique criterion yielded essentially the same results as did the Varimax (orthogonal) solution, and since the oblique solution was to serve as a check on the Varimax, it was decided to regard the oblique solution results as confirmation of the Varimax. Hence, from hereon the Varimax solution is the chosen representation of factor structures.

Harman (25:310) points out that, "The Varimax solution. . . is a precisely defined method which indeed approximates orthogonal simple structure."

Hypothesis 1

This hypothesis stated that motivator and hygiene concepts would not form two separate and distinct factors. This hypothesis was upheld. When the Varimax solution was rotated on two factors, the data in Table 4 resulted. This rotation accounted for 52.76 percent of the total score variance and 63.80 percent of all common variance.

TABLE 4

VARIMAX SOLUTION FOR SIXTY-FOUR VARIABLES* --ROTATION OF TWO FACTORS--

Variables	Factors I	Factors II	h^2
1	36	09	14
2	10	66	45
3	59	27	43
4	70	14	51
5	44	26	26
6	37	63	54
7	26	64	48
8	72	22	56
9	63	37	53
10	23	72	57
11	57	20	37
12	77	23	64
13	61	25	43
14	28	69	55
15	24	44	25
16	61	14	39
17	64	33	51
18	16	70	52
19	74	33	66

TABLE 4 (Continued)

Variables	Factors I	 II	h^2
20	74	29	64
21	61	26	43
22	25	67	52
23	19	50	29
24	72	34	63
25	63	40	57
26	18	78	64
27	68	11	48
28	82	29	75
29	69	29	56
30	31	56	40
31	37	71	64
32	64	27	48
33	62	41	55
34	13	56	34
35	78	27	68
36	80	20	67
37	61	13	38
38	28	76	65
39	32	70	59
40	69	36	61

TABLE 4 (Continued)

Variables	Factors I	 II	h^2
41	64	33	52
42	18	83	73
43	69	21	53
44	72	20	56
45	66	34	55
46	35	71	62
47	38	73	67
49	51	50	52
50	13	55	32
51	69	08	49
52	75	30	65
53	61	38	52
54	29	80	72
55	35	73	65
56	64	36	54
57	59	17	38
58	09	49	24
59	73	35	66
60	76	27	66
61	63	43	59
62	34	75	67

TABLE 4 (Continued)

Variables	Factors I	 II	h^2
63	33	58	45
64	72	33	63
Sum a_{ij}^2	19.55	14.22	33.77

*Decimal points on this and other similar tables have been omitted.

52.76 percent of the total score variance is represented here, which is 63.80 percent of all common variance.

The instrument was composed of 64 items, that is, four motivator concepts and four hygiene concepts each paired with each and every evaluative adjective bipolar word pair, of which there were eight (8 x 8 = 64). If motivators and hygienes were representative of two different domains, then one factor should have contained all or most of the motivator concept items while the other factor accounted for all or most hygiene item concepts. Such was not the case, however Table 5 lists the eight concepts and the item numbers that correspond to the concepts.

TABLE 5

ITEM NUMBERS CORRESPONDING TO INDIVIDUAL CONCEPTS

Concept	Items							
COLLEGE POLICY & ADMINISTRATION	1	9	17	25	33	41	49	57
the WORK ITSELF	2	10	18	26	34	42	50	58
ADVANCEMENT	3	11	19	27	35	43	51	59
RECOGNITION	4	12	20	28	36	44	52	60
SUPERVISION	5	13	21	29	37	45	53	61
WORKING CONDITIONS	6	14	22	30	38	46	54	62
RESPONSIBILITY on job	7	15	23	31	39	47	55	63
RELATIONS WITH SUPERIORS	8	16	24	32	40	48	56	64

From an examination of Table 4, the two factors can be identified by their composition of concept elements. Only those loadings of .50 or greater were considered as being significant. The factors contained the following concentrations of concepts:

(m) ADVANCEMENT (8)
(m) RECOGNITION (8)
(h) RELATIONS WITH SUPERIORS (8)
(h) SUPERVISION (7)

(h) WORKING CONDITIONS (8)
(m) the WORK ITSELF (7)
(m) RESPONSIBILITY on job (7)
(h) COLLEGE POLICY & ADMIN. (1)

In this instance, 60 of the 64 variables (items) had loadings of .50 or greater with one variable (no. 49) loading on both factors. The small letter (m or h) preceding the concepts above, indicates whether the concept was established a priori as a motivator or a hygiene. It can be seen that Factor 1 contains all (16) of the motivator items of the concepts of ADVANCEMENT and RECOGNITION, all (8) of the hygiene items of concept RELATIONS WITH SUPERIORS, and 7 of each group of the hygiene items of the concepts of COLLEGE POLICY & ADMINISTRATION and SUPERVISION.

Factor 11 accounts for all (8) of the items relating to the hygiene, WORKING CONDITIONS; 7 of the items relating to each of the motivators, the WORK ITSELF and RESPONSIBILITY; and lastly, one item relating to the hygiene, COLLEGE POLICY & ADMINISTRATION.

This evidence demonstrates that the concepts which were labeled motivators and hygienes (a priori) did not cluster into two distinct, separate factors. Such findings do not support Herzberg's theory. Thus, Hypothesis 1 is accepted.

Of the remaining seven rotations, those structures represented by factors ranging in number from six to nine were almost identical, that is, the same five factors emerged on each rotation while only a relatively small amount of variance was accounted for in each additional rotation. Rotations involving three and four factors were found to have a greater proportion of low loadings as well as having a number of given concepts load on two factors. Rotation of five factors yielded a structure which was not psychologically meaningful for this author. There was also considerable overlap of variable loadings, that is, several variables loaded on two factors in the five factor structure.

A corollary or subproblem of the main problem (Hypothesis 1) was to be an attempt to determine just what definable factor structure exists for this collection of variables. Since the two factors uncovered in the attempt to examine Hypothesis 1 above were composed of such a large mixture of elements (five concept-item sets on one factor and three concept-item sets on the other factor), and accounted for only 63.80 percent of all common variance, it was determined that a less cumbersome structure be sought as well as one which would account for a greater proportion of common variance.

Rotation of six factors (six through nine were almost identical) was selected as that rotation which generated the "cleanest" factor structure in terms of psychological meaningfulness. Five factors emerged and this rotation accounted for 67.98 percent of the total score variance and 82.19 percent of all common variance. This data are displayed in Table 6.

In this instance, 61 of the 64 variables had loadings of .50 or greater with one variable (no. 58) loading on two factors. Below is Table 7 with a distribution of items by factors.

When the specific items above are compared with the item numbers under each concept (Table 5), one finds that the 8 items above, loading on Factor I are the items relating to the concept phrase, COLLEGE POLICY & ADMINISTRATION. This is also the case in Factor VI above. In this instance, the 8 items are those relating to the concept of WORKING CONDITIONS. In terms of Factors II, III, and IV, the same general findings occur only in those cases two sets of specific concept items load on each of the three factors. Factor II is composed of 8 items relating to the WORK ITSELF, 6 items relating to RESPONSIBILITY (and one item relating to SUPERVISION). Factor III is composed of 7 items relating to SUPERVISION and 7 items relating to RELATIONS WITH SUPERIORS. Factor IV is composed of 7 items relating to the concept of ADVANCEMENT, and 8 items relating to RECOGNITION. Factor V is a special case in that one item relates to the concept RELATIONS WITH SUPERIORS and one item relates to the concept of the WORK ITSELF. The WORK ITSELF item also loads on Factor II. It should also be noted in Table 6 that the sum of squared factor loadings for Factor V (2.44) is less than half of the next largest squared factor loadings sum value (Factor VI--5.32).

TABLE 6

VARIMAX SOLUTION FOR SIXTY-FOUR VARIABLES --ROTATION OF SIX FACTORS--

Variable	Factors I	II	III	IV	V	VI	h^2
1	52	-07	19	02	33	12	44
2	-00	56	02	18	02	37	49
3	25	21	10	66	-04	21	60
4	14	03	48	51	11	15	55
5	01	19	51	19	12	13	36
6	26	37	26	21	-12	57	66
7	04	58	31	13	09	24	52
8	20	13	66	38	-11	14	66
9	71	28	20	35	14	10	78
10	13	68	16	19	-06	27	61
11	25	04	28	44	08	26	41
12	09	16	45	67	13	14	72
13	08	18	72	22	05	09	61
14	15	33	13	23	04	78	80
15	18	39	36	-02	-15	15	36
16	25	01	48	25	56	07	68
17	68	24	17	44	-13	15	78
18	00	74	08	22	11	14	63
19	31	24	22	70	21	18	78

TABLE 6 (Continued)

	Factors						
Variable	I	II	III	IV	V	VI	h^2
20	15	17	42	65	-08	29	74
21	-03	19	78	22	07	09	71
22	22	32	10	19	-08	77	79
23	-05	48	18	14	43	12	49
24	33	27	62	33	11	08	69
25	71	32	18	39	16	10	83
26	04	74	18	14	12	26	68
27	34	01	31	55	-10	15	54
28	15	20	45	71	13	19	82
29	08	20	70	36	-04	17	70
30	11	23	15	22	40	62	68
31	21	69	35	16	10	16	71
32	22	22	64	29	-22	09	65
33	72	25	17	36	16	22	81
34	05	57	26	02	-17	14	44
35	30	20	23	77	11	15	81
36	11	18	39	77	-05	09	80
37	08	03	68	19	35	05	64
38	20	47	15	20	04	66	76
39	16	68	25	22	01	20	64
40	33	25	67	25	09	14	71

TABLE 6 (Continued)

Variable	Factors I	II	III	IV	V	VI	h^2
41	75	22	16	41	-11	17	85
42	16	80	12	14	14	25	78
43	28	16	15	74	-07	16	70
44	15	09	37	59	44	15	73
45	10	26	77	22	23	08	78
46	13	43	27	25	-08	64	75
47	24	72	32	18	21	12	77
48	27	28	69	21	20	13	73
29	71	37	08	31	12	24	81
50	19	51	08	08	-09	20	36
51	26	03	25	61	32	01	60
52	16	24	38	66	17	14	71
53	05	29	72	25	-00	19	70
54	15	47	21	18	13	73	86
55	22	71	31	15	24	13	75
56	42	35	53	29	-17	02	70
57	76	01	17	31	-10	19	76
58	04	50	10	01	58	01	60
59	32	32	21	72	18	10	80
60	16	20	36	74	-10	19	78
61	12	37	72	23	21	09	78

TABLE 6 (Continued)

Variable	Factors I	II	III	IV	V	VI	h^2
62	20	40	18	24	18	73	85
63	23	59	36	08	03	06	55
64	27	25	71	30	01	11	74
Sum a_{ij}^2	6.11	9.43	10.39	9.81	2.44	5.32	43.50

67.98 percent of the total score variance is represented here, which is 82.19 percent of all common variance.

TABLE 7

DISTRIBUTION OF VARIABLES*

Factors	Items
I	1 9 17 25 33 41 49 57
II	2 7 10 18 21 26 31 34 39 42 47 50 55 58 63
III	5 8 13 24 29 32 37 40 45 48 53 56 61 64
IV	3 4 12 19 20 27 28 35 36 43 44 51 52 59 60
V	16 58
VI	6 14 22 30 38 46 54 62

*all variables had loadings of .50 or greater.

Factor V does not lend itself to the simple structure criteria in that only two variables (items) load to a significant degree and one of the two loads on another factor, as well. Due to this discrepancy and due to the fact that Factor V has only two variables loading .50 or greater, it was determined to treat this factor array as one consisting of only five factors.

Factor V may best be regarded as being a word-pair factor rather than a concept factor. Examination of Table 6 indicates that 8 variables (items) had relatively high loadings (from .32 to .58) on Factor V. These variables with their loadings on Factor V were:

nos. 1 (.33), 16 (.56), 23 (.43), 30 (.40), 37 (.35), 44 (.44), 51 (.32), and 58 (.58). These 8 variables have one thing in common--they are concept pairings with the evaluative adjective pair, "sacred--profane." It would appear then, that Factor V is a domain that is concerned with the meaning of sacred--profane rather than any concept meaning.

When rotated on as many as 9 factors, the same factor structure as described above appears, that is, the same 5 factors appear while 4 other factors contain only one or two variables with loadings of .50 or greater. This latter rotation (of 9 factors) accounts for 73.22 percent of the total score variance and 88.53 percent of all common variance.

The most interesting aspect of this structure involves the segregation of the motivator and hygiene concepts. Note that FactorsI and VI are composed of hygiene items (those loading .50 or greater). There is no overlap in terms of motivators and hygienes on the same factor (again, in terms of those items loading .50 or greater).

In a more negative vein, WORKING CONDITIONS variables load at least..40 but lower than .50 on: Factor V (variable no. 30), and Factor II (nos. 38, 46, 54, and 62). This finding detracts from the clearness of the concept of WORKING CONDITIONS (Factor VI) as a separate factor when so many of its related items have loaded to such an extent on Factor II.

RECOGNITION variables load at least .40 but lower than .50 on: Factor III (variables no. 4, 12, 20, and 28) and Factor V (no. 44). This finding dilutes the strength of the seemingly prominent appearance of RECOGNITION variable loadings on Factor IV.

RELATIONS WITH SUPERIORS variables load at least .40 but lower than .50 on: Factor III (variable no. 16) and Factor I (no. 56). This finding would tend to strengthen the identity of RELATIONS WITH SUPERIORS with Factor III.

COLLEGE POLICY AND ADMINISTRATION variables load at least .40 but lower than .50 on Factor IV (variables no. 17 and 41). This relationship did not appear to be psychologically meaningful in that Factor IV is composed primarily of ADVANCEMENT and RECOGNITION variables.

Labeling of Factors

In order to test Hypotheses 2 through 7 it was necessary to select a single factor structure as representative of that structure which, in terms of the variables, was psychologically meaningful, was in agreement with simple structure criteria, and was representative of a large proportion of common variance. The rotation of six factors met these conditions and was selected as the structure to be used as the basis of the determination of factor scores across factors and across subjects.

Although the rotation of six factors yielded the chosen structure, only five of the factors, as explained earlier, appeared to account for a sizeable proportion of variance as well as include a number of variables with loadings of at least .50. These were Factors I, II, III, IV, and VI of Table 7. Factor V consisted of only two variables that loaded at .50 or greater and one of those two variables (no. 58) loaded .50 on Factor II. In addition, the sum of the squared loadings of Factor V was only 2.44 and Factor V contained 20 variables with negative loadings (-), while the other 5 factors combined only accounted for 5 variables with negative loadings. It was thus determined that Factor V would not be labeled as a specific factor but would be included in the testing of the hypotheses in order to account for all possible differences among and between sub-samples.

Since both Factor I and Factor VI each had single-concept variables loading .50 or greater, it was determined that the concept names should represent the factor label. Hence, Factor I is labeled, "College Policy & Administration" and Factor VI is labeled, "Working Conditions."

Earlier it was mentioned that factors (and their labels) are not eternal verities. Both Factors I and VI contain variables with high loadings which have also loaded to a considerable degree (.40 but less than .50) on other factors, in this instance on Factors IV and II, respectively.

Factor II contained 15 variables which loaded at least .50.

The WORK ITSELF concept-items accounted for 8 of the 15 variables, the RESPONSIBILITY concept-items accounted for 6, and the SUPERVISION concept accounted for 1. Thus, this factor was labeled, "Responsibility for Performance."

Factor III contained 14 variables which loaded at least .50. The SUPERVISION concept-items accounted for 7 of the variables, while the RELATIONS WITH SUPERIORS concept-items accounted for the remaining 7 variables. This factor was labeled, "Supervision."

Like Factor II, Factor IV contained 15 variables which loaded at least .50. The ADVANCEMENT concept-items accounted for 7 variables, while RECOGNITION concept-items accounted for 8 variables. The factor was labeled, "status."

Thus five of the six factors were labeled. As mentioned above in the paragraph concerned with the labeling of Factors I and VI, factors contain variables with loadings of .50 or greater that load between .40 and .50 on other factors. This is the case with Factors III and IV as it is with Factors I and VI. This points out that factors are not discrete entities nor are they, in this case, "pure." When the value of .50 was selected as the point at which a given variable was considered to be loading to a significant degree on a given factor, the above structure (6 factors) resulted. Had .35 or .40 been selected as the cut-off point an entirely different factor structure may have resulted, although smaller loadings account for appreciably smaller amounts of variance and hence may not be meaningful.

Hypothesis 1--Discussion

Hypothesis 1 stated that, "Motivator and hygiene concepts do not form two separate and distinct factors."

In terms of the Varimax rotation of two factors most variables loaded on both factors; however, when .50 was used as a cut-off point, all variables (except nos. 1, 5, 15, and 58) loaded on one factor with a loading of at least .50. That is, 60 of 64 variables loaded at least .50 on one of the two factors. This represents approximately 94 percent of the variables. From examination of Table 4 it can be seen that some variables with loadings as high as .50 or greater on one factor had loadings as high as .43 on the other factor. Variable 49 loaded .51 and .50 on Factors I and II, respectively.

In examining the 60 variables which had a loading of at least .50 on a factor, it was found that 26 of the variables (42 percent) had loadings of from .30 to .43 on the other factor. In terms of Factor I, 16 variables loading .50 or greater on this factor loaded in the .30 to .43 range on Factor II. This included 5 variables associated with the concept, COLLEGE POLICY & ADMINISTRATION; 2 variables relating to the concept, ADVANCEMENT; 1 variable relating to the concept, RECOGNITION; 3 variables relating to the concept, SUPERVISION; and 5 variables relating to the concept, RELATIONS WITH SUPERIORS.

These 16 variables represent 42 percent of all variables loading .50 or greater on Factor I. It is evident that this finding represents some degree of overlap in terms of factor structure.

On Factor II, 9 variables loading .50 or greater on this factor loaded in the .30 to .43 range on Factor I. This includes 4 variables associated with the concept, WORKING CONDITIONS; and 5 variables relating to the concept, RESPONSIBILITY. These 9 variables represent 39 percent of all variables loading .50 or greater on Factor II. Again, some degree of overlap of factor loadings is evident.

These findings indicate that not only do the a priori categories of concepts (motivators & hygienes) fail to fall into two separate and distinct factors, but those variables which supposedly represent motivators and hygienes are found to load to some degree on both factors.

The analysis of the major problem (Hypothesis 1) made no attempt to determine whether the a priori categories of motivator and hygiene variables, as represented in the semantic differential, served as satisfiers or dissatisfiers. Rather, it was determined that the most psychologically meaningful factor structure would serve to provide a basis for this distinction. Had a two-factor structure emerged as being most meaningful (in the eyes of the author), it would have been used as the above-mentioned base.

Most of the investigations carried out in the past in regard to the motivator-hygiene theory have attempted to determine the degree of satisfaction or dissatisfaction relative to Herzberg's First Level Factors. Many of these investigations chose only three or four of the sixteen factors for study and many investigations attempted to relate these factors to overall job satisfaction. Many, as did this author, constructed items having at least face validity to attempt to represent these First Level Factors. Very few studies have attempted to examine the actual clustering of the motivator and hygiene factors as two independent domains, irrespective of satisfaction and dissatisfaction.

This investigation attempted to examine the basis of the appelation, "two-factor theory." Had a two-factor structure emerged which was psychologically meaningful satisfaction-dissatisfaction comparisons of sub-samples of subjects across factors would have resulted. The point is that the notion of satisfaction-dissatisfaction was disjoined from the factor structure in the first place. It seems pointless to make comparisons of satisfaction-dissatisfaction on the basis of motivators and hygienes when, in fact, these categories of job factors may not exist in a particular situation.

Most of the research completed in the past nine years which directly relates to the motivator-hygiene or two-factor theory treats motivators and satisfaction--hygiene and dissatisfaction as interchangeable terms. Herzberg first identified the structure (First Level Factors) then examined for satisfaction-dissatisfaction.

This investigation has followed the same basic rationale; that is, the concept-item categories were derived from First Level Factors, then a factor structure was determined from values assigned to these items, and lastly, satisfaction-dissatisfaction was examined in terms of the factor structure. The fact that the concept-items were determined *a priori* is a limitation that must be tolerated in order to test the theory.

In terms of the two-factor structure that emerged, Burke's (7) results provide some confirmation of this structure. Burke had subjects rank motivator and hygiene factors and found that both categories did not "go together." He concluded that there was not a unidimensionality underlying both motivator and hygiene factors.

Friedlander (15) also found that motivators and hygienes were not opposite ends of a common set of dimensions.

Ewen (12) factor analyzed responses on an attitude scale and the factors that emerged loaded on both motivator and hygiene dimensions.

Graen (21) using psychometric measures found that when subjects rated items based upon Herzberg's classification scheme (as does this investigation) and these ratings factor analyzed, homogeneous groupings of motivators and hygienes did not result. This is the same general result of this investigation. That is, when motivator and hygiene categories are used as a basis for ratings, the resulting ratings do not cause the categories to emerge as two separate domains. This tends to contradict the two-factor theory. Two factors did emerge, but each contained both motivator and hygiene concept-item categories and even then there was some degree of overlap in terms of loading on both factors.

In regard to the five-factor structure which emerged from the rotation of six factors, Factor 1 consists of 8 items loading .50 or greater, all of which are related to the concept, COLLEGE POLICY & ADMINISTRATION. Seven of these items load from .31 to .44 on Factor IV, 2 items load .32 and .37 on Factor II, and 1 item loads .33 on Factor V. In this instance, primarily hygiene items load to some degree on a factor (IV) that is composed primarily of motivator items.

Factor II consists of 15 items loading .50 or greater, 8 of which are related to the concept, the WORK ITSELF; 6 are related to the concept, RESPONSIBILITY; and 1 item related to the concept, SUPERVISION. Of the first 8 items mentioned, only 1 loads as high as .37 on Factor VI, while 4 of the RESPONSIBILITY concept-items load from .31 to .36 on Factor III. In this case, primarily motivator items are found to load to some degree on a predominantly hygiene factor (III)..

Factor III consists of 14 items loading .50 or greater, 7 of which are related to the concept, SUPERVISION; and 7 items are related to the concept, RELATIONS WITH SUPERIORS. Of the first 7 items, one loads .37 on Factor II, a second loads .36 on Factor IV, and a third loads .35 on Factor V. Of the RELATIONS WITH SUPERIORS concept-items, 3 load from .32 to .42 on Factor I, one loads .35 on Factor II, and 3 load from .30 to .38 on Factor IV. Here again, predominantly hygiene items load to some degree on a factor primarily made up of motivator items (Factor IV).

Factor IV consists of 15 items loading .50 or greater, 7 of which are related to the concept, ADVANCEMENT; and 8 are related to the concept, RECOGNITION. Of the first 7 items, 4 load from .30 to .34 on Factor I, 1 loads .32 on Factor II, 1 loads .31 on Factor III, and 1 loads .32 on Factor V. Of the RECOGNITION concept-items, 8 load from .36 to .48 on Factor III, and 1 loads .44 on Factor V. Again, motivator items tend to load on hygiene factors to some degree in the case of both ADVANCEMENT and RECOGNITION concept-items.

Factor VI consists of 8 items loading .50 or greater, all of which are related to the concept, WORKING CONDITIONS. Seven of these items load from .32 to .47 on Factor II, and 1 item loads .40 on Factor V. As in the case of Factor I, Factor VI tends to be composed of hygiene items (at .50 or greater) that load to some degree on a factor (II) that is made up primarily of motivator items.

The discussion in the preceding few paragraphs clearly points out that the five factors emerging from the Varimax rotation of six factors are by no means "pure." While many variables tend to load to some extent on factors in addition to the factor on which the variable loads at least .50, these other loadings be they .30, .37, etc., account for considerably less variance than a loading of .50, .60 or .70. In some cases as indicated above, all or nearly all of the 8 concept-items comprising a given factor were shown to load up to .47 on a factor comprised primarily of concepts of the supposedly opposite job factor category. Even in these cases the given factor with the .50 and greater loadings accounts for a great deal of variance in comparison to these "secondary" loadings.

Summary of Analysis and Discussion--Hypothesis 1

The criticism that the motivator-hygiene theory is method-bound may be accurate. This investigation does not support the unidimensionality of job factors as hypothesized by Herzberg. It strongly points, however, to the possibility that job factors may exist which can be regarded as being somewhat different from other factors, at least quantitatively.

While Herzberg started from "scratch," so to speak, this investigation relied upon motivator-hygiene categories on which to base empirical findings. A two-factor structure emerged which did not support the motivator-hygiene theory; however, a five-factor structure did point to the possibility of distinct job factors.

In terms of accountability for variance, which is the main thrust of factor analysis, the structure represented above in the form of a Varimax rotation of six factors is most definitive. A very clear factor structure has emerged--one that may lend considerable support to the notion of distinct job factors.

Satisfaction and Dissatisfaction--Hypotheses 2-7

Factor Scores

In order to make comparisons between colleges, sub-samples, and factors, it was necessary to convert individual concept-item T-scores to factor scores. These derived factor scores are actually incomplete factor scores (30) and were calculated operationally with the use of a program made available through the University of Florida Computing Center (Educational Evaluation Library).

What takes place in this program is as follows: Each variable (item) which loads .50 or greater on any given factor is assigned a value of one. All other variables are assigned a value of zero. These values are multiplied by the corresponding variable T-score value for every individual in the sample. These factor scores are summed and averaged over each of the six factors to give an average factor score for each of the six factors for each of the 160 subjects.

Each individual in the sample is thus represented by six average factor scores.

Analysis of Variance--Duncan's Multiple-Range Test

The actual comparisons of factors, colleges, and sub-samples were made on the basis of each individual factor (I-VI). Program

BMDO7V--Multiple-Range Tests (Health Sciences Computing Facility, UCLA) was used to compute these comparisons. Colleges or sub-samples were compared by means of subjecting individual mean factor scores to a one-way analysis of variance and then comparing means with Duncan's Multiple-Range Test. If the resulting F-ratio was not significant, then the mean differences were assumed to be from a homogeneous population. This assumption was verified in the findings.

One-way analysis of variance as a procedure is usually included in most elementary statistics texts and will not be elaborated upon here. Duncan's Multiple-Range Test is a statistical tool that takes into account all possible absolute mean differences (by arranging means in ascending order and subtracting the smallest mean from the largest, the next largest mean from the largest, etc.) and compares these differences to a value established by extracting values from a table of significant studentized ranges (values are based on number of rank-order steps between means compared), multiplying these ranges by the constant, $\sqrt{\text{M.S.}_{\text{error}}/n}$. Thus ranges are established for all possible mean comparisons. If the difference between two means exceeds the established range, the difference is significant (in this case, at the .05 level). Results for both the analysis of variance and Duncan's Multiple-Range Test for each comparison made are present in tabular form.

"Satisfiers" and "Dissatisfiers" Examined

When one examines Factors I, II, III, IV, and VI and finds that Factors I, III, and VI are composed primarily of hygiene items or variables while Factors II and IV are composed primarily of motivator variables, such a finding suggests that perhaps Factors I, III, and VI are dissatisfiers and Factors II and IV are satisfiers.

Should variable ratings on the semantic differential be representative of satisfaction with the variable at one extreme (7) or dissatisfaction with the variable at the other extreme (1), then Factors, I, III, and VI (hygienes) should have lower mean factor scores (over 160 subjects) than FactorsII and IV (motivators) mean factor scores. From examination of Table 8, one can see that not only was the variation between factors non-significant but FactorsIII and VI (hygienes) had greater mean values than did Factors II and IV (motivators). This is of no real consequence since the differences are not significant.

This finding fails to support Herzberg and hints at job factors being constituted in a manner which is in direct opposition to his theoretical position. In examining factor score means it was found that the scores assigned variables or items contained in a factor do not aid in segregating factors along an evaluative dimension.

If, in fact, the semantic differential can be regarded as providing an estimate of satisfaction-dissatisfaction along an evaluative dimension, then factors composed of motivator or hygiene variables

TABLE 8

VARIATION AMONG THE SIX FACTORS
ANALYSIS OF VARIANCE SUMMARY TABLE

Source of Variation	df	Sum of Squares	Mean Square	F
Among groups	5	.4	.08	.046
Within groups	56	9.6	.171	
Total	61	10.0		

DUNCAN'S MULTIPLE-RANGE TEST SUMMARY TABLE
MEAN FACTOR SCORES

Factor II	Factor I	Factor IV	Factor III	Factor V	Factor VI
49.251	49.314	49.329	49.332	49.349	49.412

Note: Any two means underscored by the same line are not significantly different at the .05 level.

In this instance neither the F-ratio nor the mean differences are significant.

(a priori) have not been discriminated as being different from one another. This is true when the entire sample (N = 160) is examined. When college and sub-samples are being compared, individual factors tend to discriminate to a significant degree in many instances.

On the basis of the above evidence, the factor structure chosen as most meaningful does not demonstrate the existence of satisfier or dissatisfier factors. It would appear that each factor could conceivably be considered as a satisfier or a dissatisfier in a given situation.

Hypothesis 2

This hypothesis stated that, "There is no difference in factor scores between college sub-samples (College A vs. College B)." This hypothesis was totally unsupported. Tables 9 and 10 present descriptive data concerning College A and College B samples (total college samples), respectively, while Tables 11 through 16 present results of the one-way analysis of variance and Duncan's Multiple Range Test for each of the six factors.

Each of the tables (11-16) has two things in common: one, College A had mean factor score values that were significantly different from those of College B on every factor; two, the factor score means for College A were always lower than the total sample mean factor scores (Table 8) while College B's mean factor scores were always greater than the total sample mean factor scores.

TABLE 9

DESCRIPTIVE DATA FOR COLLEGE A

Sex	N	Age	N	Years Educ. Exper. No. Years'	Junior College	Other Levels	Level of Education Degree	N
Male	75	23-29	29	1-3	80	30	Bachelor's	8
Female	27	30-40	29	4-8	18	27	Master's	59
		41-50	19	9-14	4	21	M. A. + 30	13
		51-60	19	15-25	0	16	M. A. + 60	9
		over 60	7	over 25	0	8	Doctorate	10
							Other	3
		Median, 30-40		Median	1-3	4-8	Median, Master's	

TABLE 10

DESCRIPTIVE DATA FOR COLLEGE B

				Years Educ. Exper.			Level of Education	
Sex	N	Age	N	No. Years!	Junior College	Other Levels	Degree	N
Male	31	23-29	21	1-3	30	17	Bachelor's	6
Female	27	30-40	17	4-8	21	18	Master's	14
		41-50	11	9-14	7	9	M. A. + 30	13
		51-60	8	15-25	0	11	M. A. + 60	11
		over 60	1	over 25	0	3	Doctorate	13
							Other	1
		Median, 30-40		Median	1-3	4-8	Median, M. A. + 30	

TABLE 11

DIFFERENCES BETWEEN COLLEGES ON FACTOR I
ANALYSIS OF VARIANCE SUMMARY TABLE

Source of Variation	df	Sum of Squares	Mean Square	F
Among groups	1	2346.4197	2346.4197	45,5674*
Within groups	158	8125.9609	51.4934	
Total	159	10482.3789		

DUNCAN'S MULTIPLE-RANGE TEST SUMMARY TABLE
COLLEGE MEANS

College A	College B
46.489	54.455

Note: Any two means underscored by the same line are not significantly different at the .05 level.

*significant at or beyond the .05 level.

TABLE 12

DIFFERENCES BETWEEN COLLEGES ON FACTOR II ANALYSIS OF VARIANCE SUMMARY TABLE

Source of Variation	df	Sum of Squares	Mean Square	F
Among groups	1	726.5181	726.5181	15.1621*
Within groups	158	7570.8242	47.9166	
Total	159	8297.3398		

DUNCAN'S MULTIPLE-RANGE TEST SUMMARY TABLE COLLEGE MEANS

College A	College B
47.645	52.077

Note: Any two means underscored by the same line are not significantly different at the .05 level.

* significant at or beyond the .05 level.

TABLE 13

DIFFERENCES BETWEEN COLLEGES ON FACTOR III
ANALYSIS OF VARIANCE SUMMARY TABLE

Source of Variation	df	Sum of Squares	Mean Square	F
Among groups	1	582.2219	582.2219	10.8194*
Within groups	158	8502.4453	53.8129	
Total	159	9084.6641		

DUNCAN'S MULTIPLE-RANGE TEST SUMMARY TABLE
COLLEGE MEANS

College A	College B
47.894	51.862

Note: Any two means underscored by the same line are not significantly different at the .05 level.

*significant at or beyond the .05 level.

TABLE 14

DIFFERENCES BETWEEN COLLEGES ON FACTOR IV ANALYSIS OF VARIANCE SUMMARY TABLE

Source of Variation	df	Sum of Squares	Mean Square	F
Among groups	1	1186.3831	1186.3831	21.4016*
Within groups	158	8758.6250	55.4343	
Total	159	9945.0078		

DUNCAN'S MULTIPLE-RANGE TEST SUMMARY TABLE COLLEGE MEANS

College A	College B
47.339	53.003

Note: Any two means underscored by the same line are not significantly different at the .05 level.

*significant at or beyond the .05 level.

TABLE 15

DIFFERENCES BETWEEN COLLEGES ON FACTOR V
ANALYSIS OF VARIANCE SUMMARY TABLE

Source of Variation	df	Sum of Squares	Mean Square	F
Among groups	1	346.5637	346.5637	5.7270*
Within groups	158	9561.1562	60.5136	
Total	159	9907.7187		

DUNCAN'S MULTIPLE-RANGE TEST SUMMARY TABLE
COLLEGE MEANS

College A	College B
48.240	51.302

Note: Any two means underscored by the same line are not significantly different at the .05 level.

*significant at or beyond the .05 level.

TABLE 16

DIFFERENCES BETWEEN COLLEGES ON FACTOR VI ANALYSIS OF VARIANCE SUMMARY TABLE

Source of Variation	df	Sum of Squares	Mean Square	F
Among groups	1	835.7119	835.7119	12.9849*
Within groups	158	10168.9453	64.3604	
Total	159	11004.6562		

DUNCAN'S MULTIPLE-RANGE TEST SUMMARY TABLE COLLEGE MEANS

College A	College B
47.689	52.443

Note: Any two means underscored by the same line are not significantly different at the .05 level.

* significant at or beyond the .05 level.

These findings indicate clearly that evaluative responses to the semantic differential distinguished these two sub-samples to a highly significant degree. Although it was not reported in the tables, some of the F-ratios were significant to the .001 level. In any case, College A responses were significantly different from (in a negative direction) College B responses. From examination of Tables 9 and 10 it can be seen that the only real differences between the colleges are in terms of three-to-one ratio of males to females at College A and the higher median educational level of College B. The other difference that is not indicated in the tables is that College A is in an urban area while College B is in a sub-urban area. Perhaps more meaningful differentiation can be found in the employment categories (Table 1) responding to the instrument. College B had a much greater proportion (65%) of administrators respond to the instrument in terms of the total College B sub-sample than did College A (only 42% of respondents were administrators). This fact is important when one considers that College B administrators had the highest mean factor score on 10 of 12 comparisons discussed below.

Hypothesis 3

This hypothesis stated that, "There is no difference in factor scores between and among within-college sub-samples." Since there are three employment categories within each college sub-sample there is a possibility of three combinations of pairings to check for differences--within each college. With two colleges there are six employment category pairings and these employment category pair differences are over the six factors. Hence, there are thirty-six (6 factors x 6 pairs) possible combinations of factor-employment category mean differences; only three comparisions were found to be significant at the .05 level.

Tables 17 through 22 present the descriptive data which serve to define these employment categories within college sub-samples, the smallest unit used for comparison in this investigation. Tables 23 through 28 present results of the one-way analysis of variance and Duncan's Multiple Range Test, again for each of the six factors.

In Table 23 College A academic faculty's mean factor score on Factor I (College Policy and Administration) is significantly different in a negative direction from that of College A administrators. In Table 26 College A academic and occupational faculty mean factor scores on Factor IV (Status) are significantly different from that of College A administrators. No significant differences were found among College B sub-samples.

Examination of Tables 17, 19, and 21 reveal that the three employment category sub-samples in College A share more common descriptors than uncommon ones. The administrators differ to some degree from the teaching faculty on the proportionality of sexes and years of educational experience. Exactly 92.0 percent of administrators

TABLE 17

DESCRIPTIVE DATA--COLLEGE A OCCUPATIONAL FACULTY

				Years Educ. Exper.			Level of Education	
Sex	N	Age	N	No. Years'	Junior College	Other Levels	Degree	N
Male	11	23-29	6	1-3	21	10	Bachelor's	5
Female	12	30-40	6	4-8	2	6	Master's	14
		41-50	6	9-14	0	4	M. A. + 30	0
		51-60	3	15-25	0	2	M. A. + 60	0
		over 60	2	over 25	0	1	Doctorate	1
							Other	3
		Median, 30-40		Median	1-3	4-8	Median, Master's	

TABLE 18

DESCRIPTIVE DATA--COLLEGE B OCCUPATIONAL FACULTY

Sex	N	Age	N	Years Educ. Exper.			Level of Education	
				No. Years'	Junior College	Other Levels	Degree	N
Male	7	23-29	8	1-3	7	7	Bachelor's	4
Female	8	30-40	3	4-8	5	3	Master's	5
		41-50	2	9-14	3	2	M. S. + 30	3
		51-60	2	15-25	0	3	M. A. + 60	2
		over 60	0	over 25	0	0	Doctorate	0
							Other	1
		Median, 23-29		Median	4-8	4-8	Median, Master's	

TABLE 19

DESCRIPTIVE DATA--COLLEGE A ACADEMIC FACULTY

				Years Educ. Exper.			Level of Education	
Sex	N	Age	N	No. Years'	Junior College	Other Levels	Degree	N
Male	41	23-29	18	1-3	43	15	Bachelor's	0
Female	13	30-40	14	4-8	9	14	Master's	34
		41-50	7	9-14	2	12	M. A. + 30	11
		51-60	10	15-25	0	8	M. A. + 60	6
		over 60	5	over 25	0	5	Doctorate	3
							Other	0
		Median, 30-40		Median	1-3	4-8	Median, Master's	

TABLE 20

DESCRIPTIVE DATA--COLLEGE B ACADEMIC FACULTY

				Years Educ. Exper.			Levels of Education	
Sex	N	Age	N	No. Years'	Junior College	Other Levels	Degree	N
Male	6	23-29	10	1-3	16	6	Bachelor's	1
Female	16	30-40	7	4-8	5	11	Master's	7
		41-50	3	9-14	1	2	M.A.+ 30	6
		51-60	2	15-25	0	2	M.A.+ 60	5
		over 60	0	over 25	0	1	Doctorate	3
							Other	0
		Median, 30-40		Median	1-3	4-8	Median, M.A.+ 30	

TABLE 21

DESCRIPTIVE DATA--COLLEGE A ADMINISTRATORS

				Years Educ. Exper.			Level of Education	
Sex	N	Age	N	No. Years'	Junior College	Other Levels	Degree	N
Male	23	23-29	4	1-3	16	5	Bachelor's	3
Female	2	30-40	9	4-8	7	7	Master's	11
		41-50	6	9-14	2	5	M. A. + 30	2
		51-60	6	15-25	0	6	M. A. + 60	3
		over 60	0	over 25	0	2	Doctorate	6
							Other	0
		Median, 30-40		Median	1-3	9-14	Median, Master's	

TABLE 22

DESCRIPTIVE DATA--COLLEGE B ADMINISTRATORS

				Years Educ. Exper.			Levels of Education	
Sex	N	Age	N	No. Years'	Junior College	Other Levels	Degree	N
Male	18	23-29	3	1-3	7	4	Bachelors	1
Female	3	30-40	7	4-8	11	4	Masters	2
		41-50	6	9-14	3	5	M. A. + 30	4
		51-60	4	15-25	0	6	M. A. + 60	4
		over 60	1	over 25	0	2	Doctorate	10
							Other	0
		Median, 41-50		Median	4-8	9-14	Median, M. A. + 60	

are male, and their median level of educational experience is approximately twice that of the two teaching faculty categories.

Administrators in College A think much more highly of College Policy and Administration than do academic faculty, and these same administrators rate Status variables significantly higher than do teaching faculty members included in this college sub-sample.

It appears then, that within College A both the factors of College Policy and Administration and Status could indicate areas of conflict between administrators and teaching faculty.

Hypothesis 4

This hypothesis as well as Hypotheses 5 and 6 compare similar employment categories between colleges. Hypothesis 4 stated that, "There is no difference in factor scores between academic faculty sub-samples." This hypothesis was shown to be true for only two of the six factors.

Tables 19 and 20 contain the descriptive data for both sub-samples while Tables 23 through 28 present results of the one-way analysis of variance and Duncan's Multiple-Range Test. In Tables 23, 24, 25, and 26 it can be seen that these sub-samples means differ significantly on the factors: College Policy and Administration, Responsibility for Performance, Supervision, and Status. It is obvious that College A academic faculty has responded in a considerably negative fashion to these factor items when compared with a similar sample from College B.

In Tables 19 and 20 note the reversal of male-female ratios. The College A sub-sample was predominantly male (76 percent) while the College B sub-sample was predominantly female (73 percent). College B academic faculty have a higher median educational level as well.

This particular series of findings (i. e., significant differences over four factors) seems to point to a general attitude of negativism on the part of College A academic faculty in relation to several aspects of the work situation. These four significant differences are the greatest number found in any given set of comparisons. While reversal of sex ratios may appear to be a possible explanation for these results, examination of the results of Hypothesis 5 negate this possibility. In that instance, sex ratios were almost equal and three factors discriminated the two occupational faculty sub-samples.

Hypothesis 5

This hypothesis stated that, "There is no difference in factor scores between occupational faculty sub-samples." This hypothesis was shown to be true for three of the six factors.

Tables 17 and 18 contain the descriptive data for both occupational faculty sub-samples while Tables 23 through 28 present results of the one-way analysis of variance, and Duncan's Multiple-Range Test.

TABLE 23

DIFFERENCES AMONG SUB-SAMPLES ON FACTOR I ANALYSIS OF VARIANCE SUMMARY TABLE

Source of Variation	df	Sum of Squares	Mean Square	F
Among groups	5	2871.8252	574.3650	11.6225*
Within groups	154	7610.4492	49.4185	
Total	159	10482.2734		

DUNCAN'S MULTIPLE-RANGE TEST SUMMARY TABLE SUB-SAMPLE MEANS

College A Academic	College A Occup.	College A Admin.	College B Occup.	College B Academic	College B Admin.
44.955	46.317	49.960	52.467	54.541	55.786
———	———				
	———	———			
			———	———	———
		———	———		

Note: Any two means underscored by the same line are not significantly different at the .05 level.

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*significant at or beyond the .05 level.

TABLE 24

DIFFERENCES AMONG SUB-SAMPLES OF FACTOR II ANALYSIS OF VARIANCE SUMMARY TABLE

Source of Variation	df	Sum of Squares	Mean Square	F
Among groups	5	837. 8215	167. 5643	3. 4593*
Within groups	154	7459. 4766	48. 4382	
Total	159	8297. 2969		

DUNCAN'S MULTIPLE-RANGE TEST SUMMARY TABLE SUB-SAMPLE MEANS

College A Occup.	College A Academic	College A Admin.	College B Occup.	College B Admin.	College B Academic
46.222	47. 993	48. 204	50. 713	51. 995	53.086

Note: Any two means underscored by the same line are not significantly different at the . 05 level.

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*significant at or beyond the . 05 level.

TABLE 25

DIFFERENCES AMONG SUB-SAMPLES ON FACTOR III
ANALYSIS OF VARIANCE SUMMARY TABLE

Source of Variation	df	Sum of Squares	Mean Square	F
Among groups	5	717.3784	143.4757	2.6404*
Within groups	154	8367.2539	54.3328	
Total	159	9084.6289		

DUNCAN'S MULTIPLE-RANGE TEST SUMMARY TABLE
SUB-SAMPLE MEANS

College A Occup.	College A Academic	College A Admin.	College B Occup.	College B Admin.	College B Academic
46.404	47.698	49.688	51.713	51.743	52.077

Note: Any two means underscored by the same line are not significantly different at the .05 level.

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*significant at or beyond the .05 level.

TABLE 26

DIFFERENCES AMONG SUB-SAMPLES ON FACTOR IV ANALYSIS OF VARIANCE SUMMARY TABLE

Source of Variation	df	Sum of Squares	Mean Square	F
Among groups	5	1668.4448	333.6890	6.2089*
Within groups	154	8276.4961		
Total	159	9944.9375		

DUNCAN'S MULTIPLE-RANGE TEST SUMMARY TABLE SUB-SAMPLE MEANS

College A Academic	College A Occup.	College A Admin.	College B Academic	College B Occup.	College B Admin.
46.065	46.513	50.852	51.595	53.860	53.867

Note: Any two means underscored by the same line are not significantly different at the .05 level.

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*significant at or beyond the .05 level.

TABLE 27

DIFFERENCES AMONG SUB-SAMPLES ON FACTOR V
ANALYSIS OF VARIANCE SUMMARY TABLE

Source of Variation	df	Sum of Squares	Mean Square	F
Among groups	5	439.0566	87.8113	1.4282
Within groups	154	9486.6875	61.4850	
Total	159	9907.7422		

DUNCAN'S MULTIPLE-RANGE TEST SUMMARY TABLE
SUB-SAMPLE MEANS

College A Academic	College A Occup.	College A Admin.	College B Academic	College B Occup.	College B Admin.
47.639	48.413	49.380	50.273	51.633	52.143

Note: On this particular factor neither the F-ratio nor the mean differences were significant.

TABLE 28

DIFFERENCES AMONG SUB-SAMPLES ON FACTOR VI
ANALYSIS OF VARIANCE SUMMARY TABLE

Source of Variation	df	Sum of Squares	Mean Square	F
Among groups	5	1291.0625	258.2124	4.0938*
Within groups	154	9713.4883	63.0746	
Total	159	11004.5508		

DUNCAN'S MULTIPLE-RANGE TEST SUMMARY TABLE
SUB-SAMPLE MEANS

College A Occup.	College A Academic	College A Admin.	College B Occup.	College B Academic	College B Admin.
45.900	47.246	50.292	50.987	51.073	54.919

Note: Any two means underscored by the same line are not significantly different at the .05 level.

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*significant at or beyond the .05 level.

In Tables 23, 25, and 26 it can be seen that these two sub-samples differ significantly on Factor I (College Policy and Administration), Factor III (Supervision), and Factor IV (Status). In Tables 17 and 18 it is found that College B occupational faculty are younger (median) and have more junior college experience.

Two circumstances tend to cloud these results. In the first place, occupational faculty in both institutions are, for the most part, geographically segregated from the centrality of activity in each college setting, and seem to be much more highly segregated along areas of instructional and professional activity than are academic faculty and administrators as two different groups. In the second place, these sub-samples are relatively small (N = 23, 15) and do not lend themselves to valid statistical analysis. The combined occupational faculty sub-sample (N = 38) is another matter with the N (38) having statistical respectability.

Hypothesis 6

This hypothesis stated that, "There is no difference in factor scores between administrator sub-samples." This hypothesis was shown to be true for five of the six factors.

Tables 21 and 22 contain the descriptive data for both administrator sub-samples while Tables 23 through 28 present results of the one-way analysis of variance and Duncan's Multiple-Range Test.

While it is true that administrator sub-samples differ significantly on only one factor (Factor I, College Policy and Administration, Table 23), this one difference of 10. 8 is the greatest single mean factor score difference of all mean comparisons. The mean of 44. 95 of College A administrators is the greatest departure in a negative direction from the overall mean of Factor I (Table 8) and from the combined sub-sample administrator mean factor score on Factor I (Table 22). The College B administrator mean of 55. 78 is the greatest departure in a positive direction from the overall mean of Factor I (Table 8).

This factor (1) has highly polarized the two administrator sub-samples, and it polarized the administrators on that factor (College Policy and Administration) which is probably most central to their professional endeavors in their respective institutions. One can speculate that College A administrators are quite negative concerning their administrative policy and procedures while College B administrators regard policy and procedures in a much more positive manner.

Examination of Tables 21 and 22 reveals that the College B administrators are older than College A administrators, they have more years of junior college experience, and have considerably more formal education (47 percent have doctorates) than do College A administrators. It could be that maturity, experience and education lend themselves to administrative excellence or, on the other hand, they may lead to self-satisfaction. In any case, a difference as great as this one (10. 8 score points) between those sub-samples that are usually representative of the leadership of the institution needs to be closely examined. Such extremes of negative or positive attitude indicate that organization variables need to be given consideration as well as descriptive variables representing individuals. It is also possible that environmental variables such as easy access to institutions of higher education, cultural advantages of the area, and community acceptance of the college may greatly affect morale.

Hypothesis 7

This hypothesis stated that, "There is no difference in factor scores between combined sub-samples from both colleges." This hypothesis was shown to be true for three of the six factors and for one of the three sub-sample comparisons (administrator-academic faculty, administrators-occupational faculty, and occupational faculty-academic faculty).

Tables 29, 30, and 31 contain the descriptive data for the three combined sub-samples while Tables 32 through 37 present results of the one-way analysis of variance and Duncan's Multiple-Range Test. In Tables 32 and 37 it can be seen that administrators differ significantly from both occupational and academic faculty

TABLE 29

DESCRIPTIVE DATA--OCCUPATIONAL FACULTY

				Years Educ. Exper.			Level of Education	
Sex	N	Age	N	No. Years'	Junior College	Other Levels	Degree	N
Male	18	23-29	14	1-3	28	17	Bachelor's	9
Female	20	30-40	9	4-8	7	9	Master's	19
		41-50	8	9-14	3	6	M. A. + 30	3
		51-60	5	15-25	0	5	M. A. + 60	2
		over 60	2	over 25	0	1	Doctorate	1
							Other	4
		Median, 30-40		Median	1-3	4-8	Median, Master's	

TABLE 30

DESCRIPTIVE DATA--ACADEMIC FACULTY

				Years Educ. Exper.			Level of Education	
Sex	N	Age	N	No. Years	Junior College	Other Levels	Degree	N
Male	47	23-29	28	1-3	59	21	Bachelor's	1
Female	29	30-40	21	4-8	14	25	Master's	41
		41-50	10	9-14	3	14	M. A. + 30	17
		51-60	12	15-25	0	10	M. A. + 60	11
		over 60	5	over 25	0	6	Doctorate	6
							Other	0
		Median, 30-40		Median	1-3	4-8	Median, Master's	

TABLE 31

DESCRIPTIVE DATA--ADMINISTRATORS

				Years Educ. Exper.			Level of Education	
Sex	N	Age	N	No. Years'	Junior College	Other Levels	Degree	N
Male	41	23-29	7	1-3	23	9	Bachelor's	4
Female	5	30-40	16	4-8	18	11	Master's	13
		41-50	12	9-14	5	10	M. A. + 30	6
		51-60	10	15-25	0	12	M. A. + 60	7
		over 60	1	over 25	0	4	Doctorate	16
							Other	0
		Median, 30-40/ 40-50		Median	1-3/ 4-8	9-14	Median, M. A. + 30/ M. A. + 60	

TABLE 32

DIFFERENCES AMONG COMBINED SUB-SAMPLES ON FACTOR I ANALYSIS OF VARIANCE SUMMARY TABLE

Source of Variation	df	Sum of Squares	Mean Square	F
Among groups	2	704.9409	352.4705	5.6598*
Within groups	157	9777.2891	62.2757	
Total	159	10482.2266		

DUNCAN'S MULTIPLE-RANGE TEST SUMMARY TABLE MEANS OF COMBINED SUB-SAMPLES

Occupational Faculty	Academic Faculty	Administrators
47.730	48.745	52.619

Note: Any two means underscored by the same line are not significantly different at the .05 level.

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*significant at or beyond the .05 level.

TABLE 33

DIFFERENCES AMONG COMBINED SUB-SAMPLES ON FACTOR II ANALYSIS OF VARIANCE SUMMARY TABLE

Source of Variation	df	Sum of Squares	Mean Square	F
Among groups	2	85.0279	42.5140	0.8128
Within groups	157	8212.2500	52.3073	
Total	159	8297.2773		

DUNCAN'S MULTIPLE-RANGE TEST SUMMARY TABLE MEANS OF COMBINED SUB-SAMPLES

Occupational Faculty	Academic Faculty	Administrators
47.995	49.467	49.935

Note: On this particular factor neither the F-ratio nor the mean differences were significant.

TABLE 34

DIFFERENCES AMONG COMBINED SUB-SAMPLES ON FACTOR III ANALYSIS OF VARIANCE SUMMARY TABLE

Source of Variation	df	Sum of Squares	Mean Square	F
Among groups	2	113.5290	56.7645	.9934
Within groups	157	8971.0937	57.1407	
Total	159	9084.6211		

DUNCAN'S MULTIPLE-RANGE TEST SUMMARY TABLE MEANS OF COMBINED SUB-SAMPLES

Occupational Faculty	Academic Faculty	Administrators
48.500	48.966	50.626

Note: On this particular factor neither the F-ratio nor the mean differences were significant.

TABLE 35

DIFFERENCES AMONG COMBINED SUB-SAMPLES ON FACTOR IV ANALYSIS OF VARIANCE SUMMARY TABLE

Source of Variation	df	Sum of Squares	Mean Square	F
Among groups	2	596.5225	298.2612	5.0091*
Within groups	157	9348.4141	59.5440	
Total	159	9944.9336		

DUNCAN'S MULTIPLE-RANGE TEST SUMMARY TABLE MEANS OF COMBINED SUB-SAMPLES

Academic Faculty	Occupational Faculty	Administrators
47.666	49.413	52.228

Note: Any two means underscored by the same line are not significantly different at the .05 level.

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*significant at or beyond the .05 level.

TABLE 36

DIFFERENCES AMONG COMBINED SUB-SAMPLES ON FACTOR V ANALYSIS OF VARIANCE SUMMARY TABLE

Source of Variation	df	Sum of Squares	Mean Square	F
Among groups	2	149.3483	74.6742	1.2014
Within groups	157	9758.4336	62.1556	
Total	159	9907.7812		

DUNCAN'S MULTIPLE-RANGE TEST SUMMARY TABLE MEANS OF COMBINED SUB-SAMPLES

Academic Faculty	Occupational Faculty	Administrators
48.401	49.684	50.641

Note: On this particular factor neither the F-ratio nor the mean differences were significant.

TABLE 37

DIFFERENCES AMONG COMBINED SUB-SAMPLES ON FACTOR VI
ANALYSIS OF VARIANCE SUMMARY TABLE

Source of Variation	df	Sum of Squares	Mean Square	F
Among groups	2	582.9336	291.4668	4.3909*
Within groups	157	10421.6172	66.3797	
Total	159	11004.5508		

DUNCAN'S MULTIPLE-RANGE TEST SUMMARY TABLE
MEANS OF COMBINED SUB-SAMPLES

Occupational Faculty	Academic Faculty	Administrators
47.908	48.354	52.404

Note: Any two means underscored by the same line are not significantly different at the .05 level.

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*significant at or beyond the .05 level.

sub-samples. These are the factors: College Policy and Administration, and Working Conditions. This is the first instance of Working Conditions serving as a discriminator at the employment category level (it did discriminate between the two colleges--see Table 16). Collectively, administrators have exhibited the highest mean factor scores in all comparisons. From examination of Tables 29, 30, and 31 it can be seen that administrators are predominantly male, are older, have more educational experience and more formal education than do the teaching faculty sub-samples.

In Table 35 it is seen that administrators and academic faculty differ significantly on Factor IV (Status). This is consistent with results reported previously in other comparisons. In this series of comparisons, occupational faculty and academic faculty do not differ significantly on any one of the six factors. It is only when administrators are being compared with one or both teaching faculty sub-samples that significant differences appear. Such findings may lend support to the so-called labor-management dichotomy.

CHAPTER V

SUMMARY AND CONCLUSIONS

Summary

The major purpose of this investigation was to attempt to determine the extent to which junior college personnel exhibit constellations of job attitudes consistent with Herzberg's Motivator-Hygiene theory when a methodological approach different from sequence of events was employed to determine the existence of job factors. To avoid areas of major criticism lodged at methodological creativeness in dealing with the theory, namely, use of too few a priori First Level Factors and use of measures of overall satisfaction-dissatisfaction, this investigation concerned itself with eight First Level Factors and made no attempt to assess overall satisfaction-dissatisfaction. In addition, several hypotheses were presented concerning sub-sample differences on factors should a definable factor structure emerge. These sub-samples were occupational faculty, academic faculty and administrators within each college.

The semantic differential format was utilized to obtain the raw data to be transformed for use in factor-analytic solutions and subsequent statistical manipulations. Eight First Level Factors were converted to concepts or concept phrases and paired with each and every one of eight evaluative adjective bipolar word pairs. This combination gave rise to a 64-item instrument which also contained questions relating to such descriptive variables as employment category, age, sex, years of experience, and level of education. Approximately 40 percent of the full-time staff at each of two of Florida's public community junior colleges responded to the instrument. One institution was labeled as "urban" the other "sub-urban." Both colleges became operational in the same year.

The data were subjected to both orthogonal (Varimax) and oblique (simple loadings) factor solutions. A factor structure was selected from the Varimax rotations as being most meaningful. Incomplete factor scores were calculated on the basis of this factor structure and colleges, sub-samples, and combined sub-samples were compared for mean factor score differences over the factors (6) from the chosen rotation.

In order to examine the basic assumptions underlying the Motivator-Hygiene theory, rotation of only two factors was carefully examined and found to be highly inclusive in terms of variable (item) accountability and amount of variance but not psychologically meaningful.

The structure (rotation of 6 factors) that did emerge as being most meaningful consisted of five factors (I. College Policy and

Administration, II. Responsibility for Performance, III. Supervision, IV. Status, and VI. Working Conditions). This structure accounted for 82 percent of the common variance and 61 of the 64 variables loaded .50 or greater. The factor structure was probably the most significant aspect of this investigation. In terms of satisfaction-dissatisfaction the entire sample (N = 160) mean factor scores were not significantly different from one another. While there was no basis for satisfaction --dissatisfaction in the discrimination of specific job factors for the total sample, college samples and sub-samples were found to differ significantly on all of the factors to some degree.

In terms of tests of hypotheses, the two colleges were significantly different across all factors. College A and its sub-samples had consistently lower mean factor scores than did College B. In terms of sub-sample differences, Factors I (College Policy and Administration) and Factor IV (Status) discriminated between sub-samples with the greatest frequency, respectively. Perhaps the most significant result of this series of comparisons were the combined sub-sample comparisons in which case administrators differed significantly from teaching faculty while there were no differences found between the two teaching faculty sub-samples.

Conclusions

This investigation did not confirm the Motivator-Hygiene Theory of Frederick Herzberg. . The two-factor structure which emerged consisted of Factor I which was composed of 16 motivator items and 22 hygiene items while Factor II consisted of 14 motivator items and 9 hygiene items. Thus, motivator and hygiene items were not segregated into two constellations or domains as hypothesized. Mean factor scores across the total sample (chosen factor structure) were not significantly different from one another, hence satisfaction-dissatisfaction was not shown to manifest itself in any given factor. These results support the traditional theory of job attitudes as being either satisfiers or dissatisfiers depending on the situation. The semantic differential proved to be a useful tool, although it was not used in the traditional manner. It provided the investigator with an extremely high percentage (91 percent) of useable returns and aroused only a minimal degree of critical comment. The very nature of the factor structure which emerged should serve to demonstrate the validity and predictive utility of this technique. This validation of the instrument could have a significant bearing on the use of the instrument in future investigations of job attitudes. A greater number of evaluative adjective word-pairs may have provided even clearer results and perhaps some word-pairs from other domains should have been included in order to attempt to conceal the evaluative nature of the instrument.

The factor structure chosen (six factors-Varimax criterion) was compoased of five factors, each of which contained either motivator or hygiene items. On the surface this seemed to provide some support for Herzberg but when mean factor scores were compared there were no significant differences, hence satisfaction-dissatisfaction did not serve to describe the direction of these factors.

In terms of testable hypotheses, the results were significant in many cases but the reasons and rationale as to why these differences exist are not easily determined from the available data. The two colleges, when compared, differ significantly on all six factors and whether this is due to urban-sub-urban setting is unknown. Descriptive variables for both colleges did not provide a basis for explanation for these differences. This also appears to be the case when sub-samples are compared. It hardly seems plausible to explain away these significant differences in terms of male-female ratios, age, years of experience, and educational level. While these variables do define the sub-samples and could possibly account for such differences it seems more logical to expect that organizational variables contribute significantly to these differences. College A differed in a negative direction from College B on every factor. It would seem that this result has some basis in the nature of the organization as a social process as well as the individual components and characteristics. This lack of data concerning the nature of the two colleges is seen as a serious deficiency in this investigation.

Regardless of the rationale, the investigation unequivocally points out that significant differences do exist. These results have important implications for the community junior college administrator.

Administrators and teaching faculty have different attitudes concerning job factors. Teaching faculty differ in a negative manner with respect to all of the job factors included in this investigation. This is especially true for the factor, College Policy and Administration. There is no question as to the direction of these differences; however, further investigation will be required to determine the nature of the causes of such differences and patterns in other institutions.

Further investigation along these lines may have to take many different kinds of variables into consideration before significant differences can be meaningfully examined. Perceived community attitudes, community support of the college, proximity of senior institutions (where one may pursue higher degrees), salary levels, and many kinds of institutional variables may have to be considered. The diverse population of teaching faculty may require examination by methods other than or in addition to the semantic differential. Interviews and sequence of events may provide the kinds of information that would support empirical ratings of job factors.

When more support information is gathered in order that significant differences can be more meaningfully examined, college administrators will have some means of assessing direction and intensity of job attitudes in their individual institutions.

APPENDIX A

Job Factor Scales

Please answer the following questions:

___1. Institution:______________________________

___2. Employment Category: (Check one)

  ___a. Full-time* Occupational, Vocational, or Technical Faculty
  ___b. Full-time* General Education, or College Transfer Faculty
  ___c. Full-time* Administrator (as defined by college)
  ___d. Full-time* Counselor (as defined by college)

*Meaning at least 51% of duties performed in that area.

___3. Sex: ____Male _____Female

___4. Age: ___23-29, ___30-40, ___41-50, ___51-60, ___over 60

___5. Years' Experience in Junior College: (any junior college)

___1-3, ___4-8, ___9-14, ___15-25, ___more than 25

___6. Years' Experience in Education: (K-12, university, etc.)

___1-3, ___4-8, ___9-14, ___15-25, ___more than 25

___7. Level of Education: (check only one)

___Bachelor's ___Master's + 30 ___Doctorate

___Master's ___Master's + 60 ___Other (A. A., etc.)

Instructions

The purpose of this study is to measure the meaning of certain aspects of your job by having you judge them against a series of descriptive scales. Your responses to these items will remain confidential and complete anonymity is assured. In taking this test, please make your judgments on the basis of what these things mean to you. Across from each scale you will find a different concept to be judged, that is, each scale has a 7-point scale accompanying it. You are to rate each concept on each scale in order.

Here is how you are to use the scales:

If you feel that the concept on the left is very closely related to one end of the scale, you should place your check mark as follows:

SALARY   fair X : ___ : ___ : ___ : ___ : ___ : ___ :unfair
or
SALARY   fair ___ : ___ : ___ : ___ : ___ : ___ : X :unfair

If you feel that the concept is quite closely related to one or the other end of the scale, place your mark as follows:

SALARY   strong ___ : X : ___ : ___ : ___ : ___ : ___ :weak
or
strong ___ : ___ : ___ : ___ : ___ : X : ___ :weak

If the concept seems only slightly related to one side as opposed to the other (but is not really neutral), then you should check as follows:

SALARY   active ___ : ___ : X : ___ : ___ : ___ : ___ :passive
or
SALARY   active ___ : ___ : ___ : ___ : X : ___ : ___ :passive

The direction toward which you check, of course, depends upon which of the two ends of the scale seem most characteristic of the thing you're judging.

If you consider the concept to be neutral on the scale, both sides of the scale equally associated with the concept, or if the scale is completely irrelevant, unrelated to the concept, then you check the scale as follows:

SALARY   safe ___ : ___ : ___ : X : ___ : ___ : ___ :dangerous

IMPORTANT: PLEASE RECORD A CHECK-MARK FOR EACH SCALE, and place your check-mark in the middle of the space, like this:

this   not this
___ : X : ___ : ___ : ___ : ___ : X:

Sometimes you may feel as though you have had the same item before on the test. This will not be the case, so do not look back and forth through the items. Do not try to remember how you checked similar items earlier in the test. Make each item a separate and independent judgment. Do not worry or puzzle over individual items. It is your first impressions, the immediate "feelings" about items, that we want. Of course, some of the items will seem highly irrelevant to you. It was necessary, in the design of this test, to match every concept with every scale at some place, and this is why some items seem irrelevant--so give the best judgment you can.

PLEASE ANSWER ALL ITEMS

__1. COLLEGE POLICY & ADMIN. profane__:__:__:__:__:__:__:sacred

__2. the WORK ITSELF clean__:__:__:__:__:__:__:dirty

__3. ADVANCEMENT fair__:__:__:__:__:__:__:unfair

__4. RECOGNITION for your work sour__:__:__:__:__:__:__:sweet

__5. SUPERVISION on the job fragrant__:__:__:__:__:__:__:foul

__6. WORKING CONDITIONS honest__:__:__:__:__:__:__:dishonest

__7. RESPONSIBILITY on job beautiful__:__:__:__:__:__:__:ugly

__8. RELATIONS WITH SUPERIORS good__:__:__:__:__:__:__:bad

__9. COLLEGE POLICY & ADMIN. clean__:__:__:__:__:__:__:dirty

_10. the WORK ITSELF fair__:__:__:__:__:__:__:unfair

_11. ADVANCEMENT sour__:__:__:__:__:__:__:sweet

_12. RECOGNITION for your work fragrant__:__:__:__:__:__:__:foul

_13. SUPERVISION on the job honest__:__:__:__:__:__:__:dishonest

_14. WORKING CONDITIONS beautiful__:__:__:__:__:__:__:ugly

_15. RESPONSIBILITY on job bad__:__:__:__:__:__:__:good

_16. RELATIONS WITH SUPERIORS sacred__:__:__:__:__:__:__:profane

_17. COLLEGE POLICY & ADMIN. fair__:__:__:__:__:__:__:unfair

__18. the WORK ITSELF sweet__:__:__:__:__:__:__:sour

__19. ADVANCEMENT fragrant__:__:__:__:__:__:__:foul

__20. RECOGNITION for your work honest__:__:__:__:__:__:__:dishonest

__21. SUPERVISION on the job ugly__:__:__:__:__:__:__:beautiful

__22. WORKING CONDITIONS good__:__:__:__:__:__:__:bad

__23. RESPONSIBILITY on job sacred__:__:__:__:__:__:__:profane

__24. RELATIONS WITH SUPERIORS clean__:__:__:__:__:__:__:dirty

__25. COLLEGE POLICY & ADMIN. sweet__:__:__:__:__:__:__:sour

__26. the WORK ITSELF fragrant__:__:__:__:__:__:__:foul

__27. ADVANCEMENT dishonest__:__:__:__:__:__:__:honest

__28. RECOGNITION for your work beautiful__:__:__:__:__:__:__:ugly

__29. SUPERVISION on the job good__:__:__:__:__:__:__:bad

__30. WORKING CONDITIONS sacred__:__:__:__:__:__:__:profane

__31. RESPONSIBILITY on job clean__:__:__:__:__:__:__:dirty

__32. RELATIONS WITH SUPERIORS unfair__:__:__:__:__:__:__:fair

__33. COLLEGE POLICY & ADMIN. fragrant__:__:__:__:__:__:__:foul

__34. the WORK ITSELF dishonest__:__:__:__:__:__:__:honest

__35. ADVANCEMENT beautiful__:__:__:__:__:__:__:ugly

__36. RECOGNITION for your work good__:__:__:__:__:__:__:bad

__37. SUPERVISION on the job profane__:__:__:__:__:__:__:sacred

__38. WORKING CONDITIONS clean__:__:__:__:__:__:__:dirty

__39. RESPONSIBILITY on job fair__:__:__:__:__:__:__:unfair

__40. RELATIONS WITH SUPERIORS sweet__:__:__:__:__:__:__:sour

__41. COLLEGE POLICY & ADMIN. honest__:__:__:__:__:__:__:dishonest

__42. the WORK ITSELF beautiful__:__:__:__:__:__:__:ugly

__43. ADVANCEMENT bad__:__:__:__:__:__:__:good

__44. RECOGNITION for your work sacred__:__:__:__:__:__:__:profane

__45. SUPERVISION on the job clean__:__:__:__:__:__:__:dirty

__46. WORKING CONDITIONS unfair__:__:__:__:__:__:__:fair

__47. RESPONSIBILITY on job sweet__:__:__:__:__:__:__:sour

__48. RELATIONS WITH SUPERIORS fragrant__:__:__:__:__:__:__:foul

__49. COLLEGE POLICY & ADMIN. beautiful__:__:__:__:__:__:__:ugly

__50. the WORK ITSELF bad__:__:__:__:__:__:__:good

__51. ADVANCEMENT profane__:__:__:__:__:__:__:sacred

__52. RECOGNITION for your work clean__:__:__:__:__:__:__:dirty

__53. SUPERVISION on the job fair__:__:__:__:__:__:__:unfair

__54. WORKING CONDITIONS sweet__:__:__:__:__:__:__:sour

__55. RESPONSIBILITY on job fragrant__:__:__:__:__:__:__:foul

__56. RELATIONS WITH SUPERIORS honest__:__:__:__:__:__:__:dishonest

__57. COLLEGE POLICY & ADMIN. bad__:__:__:__:__:__:__:good

__58. the WORK ITSELF sacred__:__:__:__:__:__:__:profane

__59. ADVANCEMENT clean__:__:__:__:__:__:__:dirty

__60. RECOGNITION for your work fair__:__:__:__:__:__:__:unfair

__61. SUPERVISION on the job sweet__:__:__:__:__:__:__:sour

__62. WORKING CONDITIONS fragrant__:__:__:__:__:__:__:foul

__63. RESPONSIBILITY on job dishonest__:__:__:__:__:__:__:honest

__64. RELATIONS WITH SUPERIORS beautiful__:__:__:__:__:__:__:ugly

APPENDIX B

TABLE 38

MEANS AND STANDARD DEVIATIONS OF ITEMS (VARIABLES) IN RAW SCORE FORM

Item	Mean	S. D.	Item	Mean	S. D.	Item	Mean	S. D.
1	4.19	1.24	23	5.04	1.29	45	5.01	1.36
2	5.81	1.28	24	5.29	1.38	46	5.32	1.43
3	4.94	1.57	25	4.54	1.48	47	5.26	1.30
4	4.60	1.60	26	5.41	1.24	48	5.21	1.36
5	4.64	1.53	27	4.89	1.44	49	4.64	1.50
6	5.07	1.69	28	4.95	1.38	50	6.10	1.04
7	5.43	1.34	29	5.20	1.39	51	4.54	1.30
8	5.92	1.42	30	4.47	1.34	52	4.84	1.45
9	4.66	1.59	31	5.30	1.33	53	5.36	1.37
10	5.89	1.22	32	5.42	1.53	54	4.89	1.59
11	4.59	1.39	33	4.54	1.52	55	5.14	1.30
12	4.72	1.48	34	5.78	1.29	56	5.66	1.32
13	5.32	1.41	35	4.71	1.30	57	4.86	1.67
14	4.88	1.60	36	5.05	1.54	58	5.21	1.17
15	5.59	1.34	37	4.58	1.39	59	4.72	1.40
16	4.66	1.27	38	5.04	1.60	60	5.08	1.53
17	4.86	1.62	39	5.66	1.14	61	5.03	1.37
18	5.63	1.24	40	5.29	1.39	62	4.79	1.57
19	4.63	1.33	41	4.78	1.59	63	5.67	1.15
20	5.04	1.51	42	5.59	1.17	64	5.28	1.40
21	5.05	1.40	43	4.84	1.54			
22	5.12	1.59	44	4.42	1.38			

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BIOGRAPHICAL SKETCH

Paul Raymond Lyons was born May 4, 1941, at Watersbury, Connecticut. His family moved to Tampa, Florida, in 1952, and he graduated from H. B. Plant High School in 1959. In September of 1959 he matriculated at Saint Petersburg Junior College, Saint Petersburg, Florida, and graduated in 1961. He then attended the University of South Florida in Tampa, Florida, where he received the degree of Bachelor of Arts with a major in Psychology in December, 1962.

From February, 1963, to February, 1965, he served his country in the United States Army as an instructor in the U. S. Armed Forces Institute. Upon separation from the Army in 1965, he worked as a personnel specialist with the City of Tampa, Florida, Civil Service Board. In August, 1966, he matriculated at the University of Florida and received the degree of Master of Rehabilitation Counseling in 1967. In 1968 he enrolled in the Advanced School of the College of Education and since that time, until the present, he has pursued his work toward the degree of Doctor of Philosophy (Educational Administration).

Paul Raymond Lyons is married to the former Carol Vernon of Tampa, Florida. He is a member of Phi Delta Kappa, Kappa Delta Pi, American Association for Higher Education and the Florida Educational Research Association.

This dissertation was prepared under the direction of the chairman of the candidate's supervisory committee and has been approved by all members of that committee. It was submitted to the Dean of the College of Education and to the Graduate Council, and was approved as partial fulfillment of the requirements for the degree of Doctor of Philosophy.

August, 1970

B Sharp by M C Baker
Dean, College of Education

Dean, Graduate School

Supervisory Committee:

James L. Wattenbarger
Chairman

Ralph B. Kimbrough

Richard J Anderson